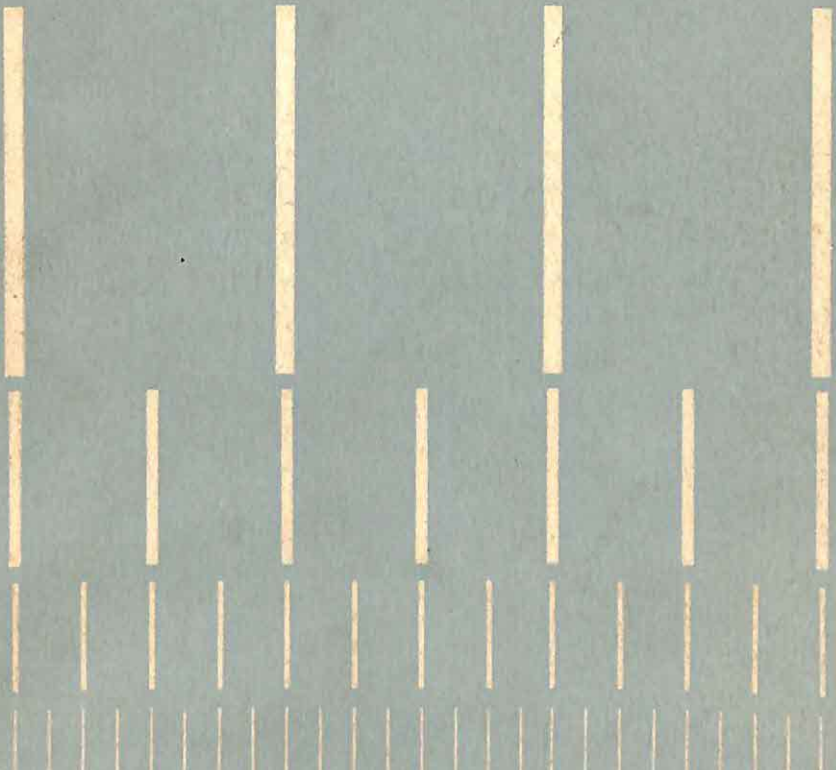
Fundamentals of educational planning

10

The analysis of educational costs and expenditure

J. Hallak



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The analysis of educational costs and expenditure

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Fundamentals of educational planning

The booklets in this series are written primarily for two groups: those engaged in—or preparing for—educational planning and administration, especially in developing countries; and others, less specialized, such as senior government officials and civic leaders, who seek a more general understanding of educational planning and of how it can be of help to over-all national development. They are devised to be of use either for private study or in formal training programmes.

The modern conception of educational planning has attracted specialists from many disciplines. Each of them tends to see planning rather differently. The purpose of some of the booklets is to help these people explain their particular points of view to one another and to the younger men and women who are being trained to replace them some day. But behind this diversity there is a new and growing unity. Specialists and administrators in developing countries are coming to accept certain basic principles and practices that owe something to the separate disciplines but are yet a unique contribution to knowledge by a body of pioneers who have had to attack together educational problems more urgent and difficult than any the world had ever known. So other booklets in the series represent this common experience, and provide in short compass some of the best available ideas and experience concerning selected aspects of educational planning.

Since readers will vary so widely in their backgrounds, the authors have been given the difficult task of introducing their subjects from the beginning, explaining technical terms that may be commonplace to some but a mystery to others, and yet adhering to scholarly standards and never writing down to their readers, who, except in some particular speciality, are in no sense unsophisticated. This approach has the advantage that it makes the booklets readily intelligible to the general reader.

Although the series, under the general editorship of C. E. Beeby of the New Zealand Council for Educational Research in Wellington, has been planned on a definite pattern, no attempt has been made to avoid differences, or even contradictions, in the views expressed by the authors. It would be premature, in the Institute's view, to lay down a neat and tidy official doctrine in this new and rapidly evolving field of knowledge and practice. Thus, while the views are the responsibility of the authors, and may not always be shared by Unesco or the Institute, they are believed to warrant attention in the international market-place of ideas. In short, this seems the appropriate moment to make visible a cross-section of the opinions of authorities whose combined experience covers many disciplines and a high proportion of the countries of the world.

Foreword

This is the second booklet in the series to deal with the costing of education, which reflects both the importance of the subject to educational planning and also the variety of viewpoints possible on a process that might appear to the outsider to be relatively straightforward. Number 6 of the series, *The Costing of Educational Plans*, by J. Vaizey and J. D. Chesswas, was frankly practical in intent. Part Two was a direct account of how an able and experienced ministry of education in a developing country did in fact cost its plans. Part One was a generalized guide to practice; in it John Vaizey touched from time to time on some of the theoretical complexities behind the practice, but he did not let this, within the confines of a brief essay, deter him from his primary purpose of giving the busy practitioner in a developing country the minimum amount of theory necessary for the costing of plans.

This booklet approaches the subject from a different angle. In the first place it is written by a Frenchman and, secondly, it is written from the point of view of an economist who wants to make clear the kinds of problem he faces in the analysis of educational costs. As a result, Jacques Hallak's treatment might occasionally appear to the practitioner as slightly academic and removed from the brutal realities of everyday practical administration and planning. But his purpose is quite definitely practical; in stressing the complexities that lie behind the choice of methods and the interpretation of the results of costing, he wants to make the man in the field understand just what he is doing when he selects any one method of solving a problem of costing. Only then will administrators and planners know the limits within which they can place reliance on the results. The comparison of costs between different countries can be particularly deceptive unless one knows the methods used in each and their effects upon the final figures.

The practical administrator will feel thoroughly at home in one part of this booklet, where the author deals with the 'confrontation' which forms the fifth step in the preparation of a plan as outlined in figure 2 on page 47. It is the relative neglect of this process in many books on planning that gives them a faint air of unreality for the administrator or politician sweating it out in a ministry of education, who looks forward with something like dread to the annual blood-bath, when the gap between his plans and the amount of money available for the coming year becomes all too evident, and when he must himself play a part in deciding which of his cherished ideas shall go to the slaughter. Dr. Hallak is right, too, in pointing out that, in practice, this confrontation is not a single climactic event but an attitude of mind that affects every stage in the planning and gradually intensifies up to the point where the most painful decisions can no longer be postponed. His brief treatment, and the practical examples he gives, provide a useful introduction to this untidy but vital process in planning.

Jacques Hallak's claim to write on costing rests no less on his practical experience than on his theoretical preparation. He was a student at the 'Institut de statistiques' of the 'Université de Paris', and at the 'Centre d'études des programmes économiques', and took his doctorate of science (in econometrics) in Paris. For five years he was *Chargé de mission* at the 'Direction du Trésor au Service des études économiques et fiancières' and took part in the preparation of the French Plans. As an associate member of IIEP he has been co-author of two of the African research monographs, and is at present engaged in research on the various methods of utilizing cost analysis to improve educational decision-making, planning and efficiency. He has drawn widely on work at the Institute for practical examples throughout the booklet.

The booklet is a valuable complement to some of the earlier publications in the series. The newcomer to the subject would be well advised to read *The Costing of Educational Plans*, number 6, first. Dr. Hallak gives ample cross-references to enable the reader to see the relations between his essay and the earlier work, and he refers also to number 2 in the series, Raymond Poignant's *The Relation of Educational Plans to Economic and Social Planning*, which approaches the broad subject of educational finance from still another angle.

C. E. Beeby
General editor of the series

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Introduction

Educational planning is an activity which demands the deployment of many diverse skills. It calls for the services of administrative officials, academic educationists and practising teachers, economists, sociologists and statisticians and many other kinds of specialist. The value, the feasibility and the ultimate success of any education plan will depend largely on the team spirit displayed by the planners. In the course of team discussions, arguments can be supported or challenged, conclusions can be accepted or rejected, only if the economist understands the language of the educationist, and if the administrator can follow the reasoning of the economist.

It is in that spirit that this booklet has been written. Its main object is to clarify the basic ideas underlying the methods of costing and analysis and the projection techniques used by the costing expert, responsible for estimating expenditure and sources of finance.

Part One deals mainly with concepts of cost. The definitions of cost used in economics are briefly surveyed, after which the special case of education is considered, leading to the introduction, clarification and discussion of the idea of cost to the community. In this connexion certain distinctions are drawn, especially between money cost and opportunity cost.

Part Two deals with costing as an instrument of economic analysis and outlines the answers to various questions, such as how to assess the total cost of education, what is the most helpful breakdown of cost components, and what are the explanatory variables which account for cost trends?

Part Three discusses methods of establishing total costs and unit costs, first from data derived from the sources of finance, and secondly, from the accounts of education establishments. The advantages and disadvantages of the different types of unit cost are also compared.

Finally, in Part Four, techniques of cost projection are introduced and illustrated by figures. In this connexion, it has been thought valuable to refer to the main stages in the preparation of the plan, so as to relate the theoretical approach to the hard facts, where approximation is often the only expedient.

Two booklets, numbers 2 and 6, already published in this series, are often referred to in the text and are strongly recommended for additional reading. They cover some topics in more detail than has been possible here, and others they treat rather differently.

Part One

Concepts of cost: general

1. The concept of cost in economics

Before defining cost in education, it is as well to recall the meaning of cost in economics.

In general, the concept of cost comes into play in the production of goods or services. It will be remembered that: (a) cost may be expressed in terms of money or in non-monetary terms; (b) cost affects a specific economic transactor: producer, seller, buyer, consumer, etc.

Thus, when the owner of a factor of production offers that factor to a producer, the cost to the owner is represented by his 'consumption forgone', while the producer incurs a precise and measurable money cost, made up of wages, interest, charges, etc.

Some economists have carried the distinction between 'real cost' and 'direct production expenditure' a very long way. Marshall, for example, distinguishes the real cost which corresponds to the effort and sacrifice needed to produce the goods or services, on the one hand, and the outlay consisting in payments made to owners of the factors of production on the other.

In other words, the real cost corresponds to the opportunity cost; it is assumed that throughout the economic life of any good there is always a choice of alternatives, and that the cost of any choice must be expressed in terms of the 'opportunity forgone' to achieve the alternatives. The money cost to the consumer of the good or service is deemed to represent a certain equivalent, in financial terms, to the real cost to the seller. Because of the existence of a 'chain' of economic transactors, starting from the owner or first producer, and ending with the final consumer, economic logic and the laws of behaviour ensure that the cost to any given transactor is always equal to, or higher than, the cost to the transactor up the line, and equal to or less than the cost to the transactor down the line. Thus, for example, the cost of a food product to the final consumer (retail price) is higher than its cost to the retailer (wholesale price plus charges) which, in turn, is higher than its cost to the wholesaler (his purchase cost, plus charges); similarly, the wholesaler's cost is higher than the producer cost, and so forth.

Having thus briefly recalled the economic concepts of cost, let us now consider how these concepts come into play in the education sector.

2. Problems arising out of the special character of the education sector

The education sector, as the producer of the service of 'education' and like any other sector of activity, theoretically brings into play the same concepts of cost. A closer look at the application of the concept of cost to education, however, reveals three types of difficulty inherent in the very nature of the activity of education, and arising more particularly out of: (a) the definition of the production of education; (b) the identification of the economic transactors concerned with education; (c) the fact that education has the character of a public service.

a. *The production of education*

By analogy with other sectors of activity, it is accepted that the activity of education consists of producing a service which can be explicitly defined by reference to the aims of the education system. For instance, one product of education may be the preservation and enlargement of the sum of human knowledge; another product is measured by the creation and development of a civilization; yet another is measurable by the expansion of the reserves of human resources. For the sake of simplicity, we shall limit ourselves to the view that the production of education consists of either *transmitting* or *ensuring the assimilation* of, a body of knowledge, certain ways of behaviour, etc.[1] In the first case, the production of education is measured mainly by the number of enrolments and in the second by the number of successes, or scholastic performance.

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[1] These definitions simplify the ideas of education to such an extent that, from one point of view, they amount to a misrepresentation. Educators, for example, might challenge them and contend that education is not transmitted by the teacher, who only creates (or should create) the necessary conditions to enable

The two different definitions imply two different measurements of the quantity of education produced by the same system. In contrast to what happens in every transaction relating to goods or services, the quantity of education supplied or 'sold' by the producer is not equal to the quantity acquired or 'bought' by the consumer. In estimating total or unit costs, therefore, it is necessary to specify clearly whether the reference is to producer cost or consumer costs; though even this assumes that a distinction can be drawn between the producer and the consumer of education.

b. *The economic transactors concerned with education*

The producers may be: the education establishment, the teacher, the public authority (ministry of education) a private agency (in the case of private education) families (who help to bring up children at home), or any other non-formal teaching institution. The consumers are the pupils and students and also families, which are, in a sense, 'buyers' of education for their children. One could thus speak of: (a) the cost to the agencies producing education, essentially education establishments and administrative or supervisory authorities; (b) the cost to the consumers of education, essentially families.

The cost to families corresponds to any school fees paid and to the relevant portion of taxes paid. Should opportunity cost also be included, e.g., the 'income forgone' for the families as a result of sending their children to school, instead of sending them out to work? We shall revert to this point later, but for the present it would be well to bear in mind that it does represent a problem; in some low-income families, the 'income forgone' is an explanatory factor in school wastage.

The cost for establishments or, more generally, for education authorities, corresponds to the establishment budgets; salaries, upkeep and maintenance charges, supplies, depreciation, etc. Here again, the problem of opportunity cost arises and will be considered further below. Let us consider for the moment only the money outlay.

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the pupils to become educated. This is obviously a question of terminology. The author's simplified concept of the production of education tends only to underline one of the difficulties which arise as soon as one tries to calculate the cost of education.

c. *Education as a public service*

On the micro-economic scale, at the level of a family or one education establishment in particular, there is no very close relation between the cost to the producer—the education establishment—and the cost to the consumer—the family. In the first place, the education establishment does not, in general, directly bear the whole of its operating costs—since the teachers are often paid direct by the central authorities; secondly, under a free education system, the direct cost to the family is little or nothing, and the indirect cost—i.e., financing by taxation—depends less on the question whether or not the family is a 'consumer' of education than on other factors, such as the family income. These difficulties at the micro-economic level can be explained by the fact that the activity of education has the character of a public service.

It is therefore more natural to treat families as a whole and to consider the education authorities as a single transactor. In so far as the budgets of the education authorities are essentially financed by families[1] (taxation and school fees), there is a broad equality between the money cost to the producer and consumer of education. This is obviously not true of the real cost; the opportunity cost for families is virtually independent of the opportunity cost for education authorities.

For all these reasons, then, we arrive, in the last analysis, at the expedient of defining a special economic transactor: 'the national community'. The cost of education means: 'the cost to the community of the expansion and functioning of the education system'. The producers, sellers and consumers of education are thus merged into one and the same economic transactor. This concept of cost means that the whole of the monetary and non-monetary effort which the community devotes to education must be inventoried and consolidated.

3. Components of cost to the community

The following equation results from the definition of cost to the community:

Cost of education = expenditure on public and private education
(eliminating any duplication)
+ opportunity costs not occasioning actual
expenditures

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[1] With some contribution from enterprises and from abroad (foreign aid).

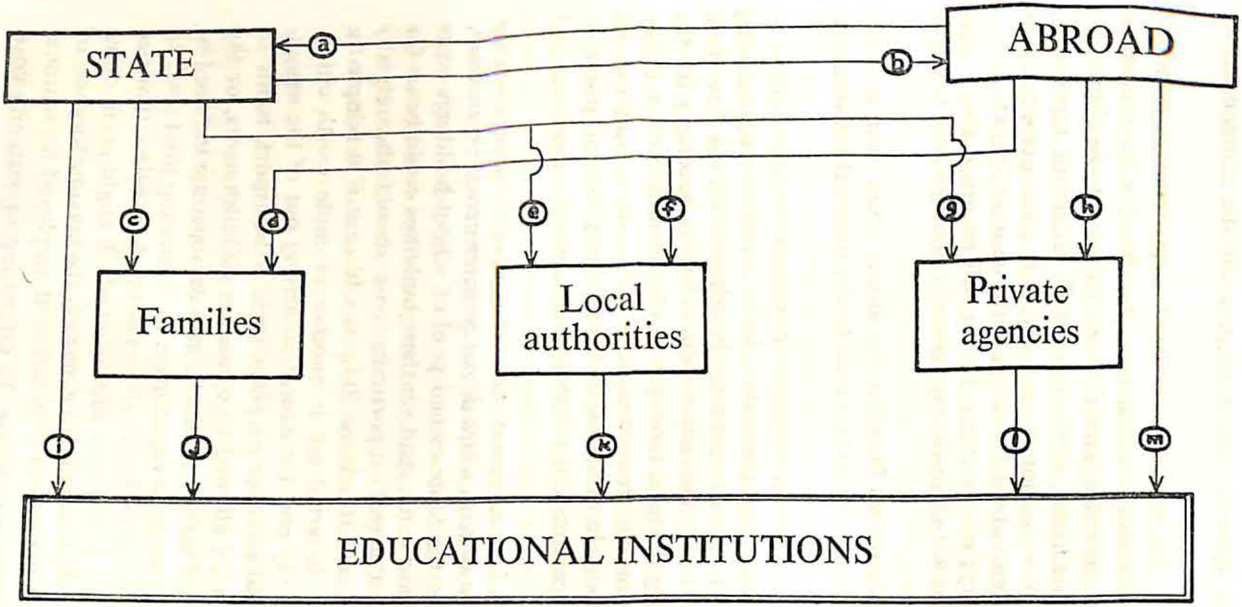
Let us now try to define a little more precisely the components of cost to the community.

In figure 1 (p. 18), for the sake of clarity I show the main monetary flows between the economic transactors concerned with education. Obviously in certain countries some flows would have to be eliminated from, or added to, the figure, which is a highly schematic representation. For example, in a developing country, it is quite exceptional to find a flow of State funds abroad—except in the context of aid to another developing country; in any event, flow **a** will be much larger than flow **b**, whereas in the aid-giving industrialized countries flow **b** will be more substantial.

A distinction can be drawn between: (a) money costs from national resources; (b) total money costs; (c) cost to the national community; (d) total cost.

Money costs from national resources represent the direct flow to educational institutions from the State **i**, local authorities **k**, families **j** and private agencies **l**; this amount must be adjusted for the flow from abroad [(a−b)+d+f+h]. This adjustment is hardly necessary for the purpose of estimating the total money cost of education; after calculating the cost to national resources, it is sufficient to add the net amount of external aid. In assessing total real costs, it is proposed to add to the actual expenditure the opportunity costs for domestic and foreign transactors.

Opportunity costs *here* represent *the real charges resulting from the operation of education systems which do not occasion actual expenditure.* For example, part of the State-owned pool of school buildings costs nothing; its money cost is nil. And yet these buildings could be let for other purposes and the real opportunity cost should theoretically include the notional rent which the State would earn if it adopted a different alternative. External aid is another example worth citing. There is an opportunity cost for education arising out of the assignment of aggregate aid to other purposes such as transport, roads or hospitals, etc. Tax relief allowed to education establishments, or the customs-free import of certain products, also demonstrate the need to add such opportunity costs to expenditure in estimating total cost. In practice, this amounts to an 'income forgone' for the public authorities or to a concealed State subsidy for education which might profit other users. One last example is worth citing, namely the 'income forgone' of pupils and students; the school population, if employed on national production, would earn an income. In estimating opportunity cost,



Money costs from national resources $= (i+j+k+l)-[(a-b)+d+f+h] = A$

Total money costs $= A + m = B$

Cost to the national community $= A +$ opportunity cost to domestic transactors

Total cost $= B +$ opportunity cost of foreign aid $+$ opportunity cost for domestic transactors

FIGURE 1. *Pattern of costs*

account should theoretically be taken of the loss of income due to the withdrawal from working life of a fraction of the school population.

Not all educational economists, however, accept the inclusion of such opportunity costs in estimating the cost of education.

It may be recalled, however, that:

1. In economics, the real cost, including the opportunity cost, is clearly distinguished from the money cost, in this sense that it is taken as the cost expressed in terms of 'failure to achieve' the best alternative and not of the actual expenditure of the consumer of the goods or services.
2. In the education sector it has been thought more rational to consider solely the cost to the whole of the community, and not the cost to a specific transactor, such as families.

In this sense, what is true at the level of individuals or households is not necessarily true at the level of the whole community. For example, in estimating the total cost of education, the 'income forgone', however high it may be for a particular family, may be virtually negligible for the nation as a whole. This is particularly true in periods of underemployment; the fact that an age group is available on the labour market in no way means that they will necessarily find employment. The fact nevertheless remains that, out of deference to the whole definition of opportunity costs, in principle they should be included.

What is, on the other hand, not quite so clear, is the correct method of estimating so as to allow for the magnitude of the 'income forgone' on the assumption that some or all of the school population at a certain level might alternatively be available on the labour market.[1]

The appraisal of opportunity costs would be of real value to the authorities responsible for formulating social policy and allocating resources between various social investments and subsidies to the sectors of the greatest value to the community. But as things stand at present, it must be confessed that the essential discussion and research on this theme has scarcely progressed beyond the closed circle of initiates, and has had little practical effect on administrative decisions.

In the following pages I shall therefore confine the study to money costs, i.e., following the conventions adopted here, those which can be estimated in terms of actual expenditure.

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[1] R. C. Blitz, 'The nation's educational outlay', *Economics of Higher Education*, Selma J. Mushkin (ed.), Washington, D.C., U.S. Department of Health, Education and Welfare, Office of Education, 1962; T. W. Schultz, 'Capital formation by education', *Journal of Political Economy*, LXVIII, Chicago, December 1960; T. W. Schultz, *The Economic Value of Education*, New York, London, Columbia University Press, 1964.

Cost analysis

Educational costs may be used as: (a) instruments for analysing the financial aspects of education ('diagnosis'); or (b) parameters for projecting the trend of education systems ('prognosis'), and the approach will differ according to the purpose in view.

In this part, costs are considered solely as instruments of analysis. The first section deals with over-all analysis, designed to define the place of education in the national economic context. The second section deals with the detailed analysis of total and unit costs by type and level of education and by purpose of expenditure.

1. Over-all analysis

The object of over-all analysis is to provide the most precise possible particulars of the flow of educational finance (actual and prospective). The value of this approach is that it indicates the comparative importance of education in the national economy, opens the way to studies of financing and facilitates international comparisons.

Once the total (money) cost of the activity of education is estimated in terms of actual expenditure, how should we set about making the analysis? The following paragraphs attempt to outline an answer.

1. A first way of analysing the flow of educational finance is to study the time trend of educational expenditure. By constructing a sufficiently long time series, it is possible to assess the general tendency of any changes in the financial flow in recent years. Let us take an example: table 1 (column 1) shows the trend of educational expenditure in the

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TABLE 1. Trend of total educational expenditure in the Federal Republic of Germany 1950–1962 (in millions of DM)

Year[a]	At current prices (1)	Index (previous year = 100) (2)	At constant prices 1954 (3)	Index (previous year = 100) (4)
1950	2 473.2	.	3 572.4	.
1951	2 994.2	121.0	3 767.2	105.4
1952	3 519.3	117.5	4 035.0	107.1
1953	4 069.6	115.5	4 283.2	106.1
1954	4 466.9	109.8	4 466.9	104.2
1955	4 931.7	110.0	4 668.1	104.5
1956	5 613.4	113.8	4 922.0	105.4
1957	6 094.4	108.5	5 040.7	102.4
1958	6 794.7	111.5	5 259.5	104.3
1959	7 182.9	105.7	5 519.7	104.9
1960[b]	6 244.0	.	4 462.3	.
1961	9 165.5	.	6 095.3	.
1962	10 263.8	112.0	6 539.4	107.2
1962/1950	.	415.0	.	183.0

NOTES

[a] 1960–1962, including the Saar

[b] 1960, nine months

. Not applicable

SOURCE Günter Palm, *Die Kaufkraft der Bildungsausgeben. Ein Beitrag zur Analyse der öffentlichen Ausgaben für Schulen und Hochschulen in der Bundesrepublik Deutschland 1950 bis 1962* [Purchasing power of expenditure on education. A contribution to the analysis of public expenditure in schools and institutions of higher learning in the Federal Republic of Germany, 1950–1963]. Olten und Freiburg im Breisgau, Walter, 1966, p. 56. (Texts and documents in educational research, published by the Institute for Educational Research in the Max-Planck Society.)

Federal Republic of Germany from 1950 to 1962. Column 2, in particular, shows that after a growth in the financial flow of the order of 20 per cent at the beginning of the period, the annual growth rate fluctuated around 10 per cent with a low of 5.7 per cent between 1958 and 1959 and a high of 15.5 per cent between 1952 and 1953. Over the whole period, the growth in the financial flow to education is considerable, since, in absolute value, the 1962 expenditure is more than four times the 1950 figure. It is true that the 315 per cent growth in the financial flow does not represent a comparable growth 'in volume' owing to the rise in prices. This is confirmed by the last two columns in the table. At constant prices the growth rate fluctuates around 5 per cent and the whole aspect of the table is radically changed. Over the period 1950–1962, the increase in the financial flow at constant prices is no more than 83 per cent.

This example demonstrates the need to express the total cost of education at constant prices if it is desired to assess the trend of the

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flow of educational finance 'in volume'. For this purpose it is desirable to construct an education price index to adjust the statistical series.[1]

2. The analysis of educational costs provides some valuable indications on the time trend of the financial flow, but tells us nothing about the relative magnitude of the financial effort, which varies, *inter alia*, with the size of the country. If only for this reason, it is scarcely possible, by comparing the amount of educational expenditure in two different countries, to say which of them is making the greater effort. As a matter of logic, it has therefore been necessary to find some characteristic indicators for the different countries so that costs can be expressed in terms of these indicators. The magnitudes generally chosen are the gross domestic product (monetary and total), total public expenditure, the national budget, and the population of school age.

3. Gross domestic product is a national accounts aggregate; it represents the total goods and services produced within the country.[2] Part of this production, the magnitude of which varies according to the country's level of development, is not the subject of monetary transactions. In some cases, the fraction of production falling outside the monetized sector is so large that the national accounts experts have been naturally led to distinguish between total gross domestic product and monetized gross domestic product. For example, the breakdown of the gross domestic product between the monetized and the non-monetized sector, in three African countries was as follows[3] (in thousand millions of francs CFA in 1961).[4]

	Monetized	Non-monetized
Togo	6 180	21 520
Central African Republic	12 275	13 720
Gabon	24 400	8 145

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[1] This question can hardly be discussed in detail here; interested readers should consult the work cited in the footnote to table 1 or W. Wasserman, *Education Price and Quantity Indexes*, Syracuse N.Y., Syracuse University Press, 1963. (The economics and politics of public education, 12.)

[2] A very full analysis of the concepts of national accounts will be found in: R. Poignant, *The Relation of Educational Plans to Economic and Social Planning*, Paris Unesco/IIEP, 1967. (Fundamentals of educational planning, 2.)

[3] Source: Nguyen Huu Chau, *Les dépenses d'enseignement dans quatorze pays africains d'expression française*, Paris, IIEP, 1965. (Working paper, IIEP/PRG-AFR/65.II.1.)

[4] One franc CFA = USA cents 0.405.

Owing to the importance of the non-monetized sector, some economists think it more significant to express educational expenditure as a percentage of monetized gross domestic product alone and not as a percentage of total gross domestic product. The statement that such-and-such a fraction of total gross domestic product has been devoted to education underestimates the real charge on the country, since the nation's real effort is concentrated in the modern sector of economic activity. For example, in a country such as Togo, while 3.5 per cent of total gross domestic product is devoted to education, the real effort is in fact four times as high, since out of nearly 28,000,000 million francs CFA of gross domestic product, only the 6,200,000 million francs CFA of the monetized sector really contribute to educational financing.

Other economists point out that the distinction between monetized and non-monetized gross domestic product is not so simple and that the segregation of the subsistence sector and the modern sector is not so absolute as it might seem at first sight. The educational effort, into the bargain, does not cover the modern sector only and the impact of educational development on the subsistence economy is very far from being negligible. It would therefore be dangerous to relate the cost of education to the monetized gross domestic product alone, thus disregarding the whole activity of the traditional sector.

This rapid survey is enough to show that the question of the choice of indicator is far from being simple or finally settled. Both frames of reference are valid up to a certain point; while it is not entirely true that educational expenditure should be expressed as a percentage of monetized gross domestic product alone, it is equally not entirely false that total gross domestic product is a particularly significant aggregate for all developing countries. The important thing is that, in overall analyses of the flow of educational finance in general, and in international comparisons in particular,[1] the indicator chosen should be clearly specified and that the conclusions should be qualified in the light of each of the two indicators. By way of illustration, table 2 shows a comparison of the education effort as a percentage of total and of monetized gross domestic product in five African countries in 1964.

4. In the developed or developing countries, the public sector generally plays a paramount part in financing education. Furthermore, since the private sources of finance are often little known, educational

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[1] See on this point: R. Poignant, op. cit.

TABLE 2. Total educational expenditure as percentage of gross domestic product

Country	Total gross domestic product	Monetized gross domestic product
Congo (Brazzaville)	8.8	12.5
Ivory Coast	4.5	7.3
Madagascar	7.0	14.0
Niger	2.2	10.0
Senegal	6.3	11.0

SOURCE Table prepared on the basis of information in: J. Hallak and R. Poignant, *Les aspects financiers de l'enseignement dans les pays africains d'expression française*, Paris, Unesco/IIEP, 1966 (Monographies africaines, 3.)

economists have no alternative but to assess only the flow of educational finance from public resources. The most natural idea then is to compare public expenditures (or the money cost to the public authorities) as a percentage of total public expenditure. Furthermore, in trying to analyse financing capacity and to define the relative importance of education in the State's field of action, it seems logical to measure the share of the 'education budget' in the total budget. What are we to think of these methods of approach? Two comments can be made; the first is designed to clarify methods, the second to define the limits of this type of analysis.

(a) The comparable magnitudes must be clearly specified.

1. Since public educational expenditure represents a consolidation of the expenditure of the State, the local authorities and other public agencies (with or without external aid) total public expenditure should also represent a consolidation of all public budgets (with or without external aid).
2. The 'education budget' includes not only the budget of the ministry of education, but any educational expenditure borne on the budgets of other ministries.

(b) Whether it relates to a single country or to countries with comparable financial structure, over-all analysis based on public finance alone ceases to be significant as soon as the recorded trends relate to a country where the system of public finance has changed, or to a sample of countries with different financial structures.

To give a few orders of magnitude, the Philippines devotes more than 30 per cent of its budget to education, but in Cameroon public educational expenditure in the consolidated budget amounted to only 15.7 per cent in 1963/64. Everything depends on the reference magnitudes. For example, still in 1964, in Thailand and the Ivory Coast, the current budget of each of the ministries of education was in the neighbourhood of 16 per cent of the national budget. But whereas in Thailand the university budgets were not taken into account, in the Ivory Coast part of the cost of the University of Abidjan was borne on the budget of the Ministry of Education. In the Ivory Coast, moreover, if account were taken of educational expenditure borne on the budgets of other ministries, the resulting ratio between educational budget and national budget would be 22.8 per cent. If account were also taken of capital expenditure on education in the general and special budgets, the share of education would be no more than 16.7 per cent. These examples show the difficulties of interpretation and the limitations of budget comparisons.[1]

Table 3, taken from an OECD study on Argentina, illustrates the trend of the proportion of the federal budget devoted to education from 1957 to 1964, distinguishing expenditure on public education and grants to private education.

TABLE 3. Percentage of total federal budget devoted to education in Argentina, 1957–1964

Year	Public education %	Grants to private education %	Total %
1957	12.2	0.5	12.7
1958	13.7	0.7	14.4
1959	13.3	1.1	14.4
1960	11.5	1.0	12.5
1961	12.5	1.0	13.5
1962	15.8	1.6	17.4
1963	16.1	1.7	17.8
1964	17.9	1.8	19.7

SOURCE OECD, *Education, Human Resources and Development in Argentina*, table II.104, p. 187, Paris, 1967

5. Owing to the importance of the population factor in connexion with enrolments, it may be useful to compare the flow of educational finance with the population of school age and with actual enrolments. This type of analysis is particularly significant for primary education; it is a useful complement to the general information furnished by the com-

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[1] Sources: Ivory Coast, J. Hallak and R. Poignant, *Les aspects financiers de l'éducation en Côte-d'Ivoire*, Paris, Unesco/IIPE, 1966. (Monographies africaines, 8.) Philippines and Cameroon, unpublished mission reports; Thailand: Ministry of Education, Educational Planning Office, *Analysis of the Ministry of Education Budget, 2503–2507* (A.D.: 1960–1964), Bangkok, 1964.

parisons referred to above. Some difficulties of interpretation nevertheless persist and can be removed only by a more detailed analysis.

Table 4, compiled for two Asian countries at different levels of development and of different size, gives a comparison of the public flow of educational finance, as a percentage of gross national product, and of total public expenditure, and by reference to the total population of school age (5-19).

TABLE 4. Current public expenditure on primary and secondary education in Ceylon and Japan in 1963

	Total public expenditure %	Gross national product %	Per child of school age $ USA
Ceylon	15.4	4.4	17
Japan	16.3	3.3	64

SOURCES J. Alles, S. V. de Silva, F. W. W. Kulatunga, *Financing and Costs of First and Second-level Education in Ceylon, 1952–1964*, Colombo, Ministry of Education, Ceylon, Division of Secondary Education, 1967; Unesco, *Statistical Yearbook 1965*, Paris, 1966

2. Detailed analysis

In order to carry a little further the analysis of the flow of educational finance, it would be well to go into somewhat greater detail and to consider how educational expenditure is broken down by different criteria and what is the trend of costs in the light of explanatory variables. In order to give concrete examples and for the sake of clarity, a few methods of analysing recurrent costs[1] will be outlined, illustrated by typical figures.

Cost by type of education. It is useful to distinguish between expenditure on public and on private education. This breakdown of total expenditure by type of education obviously depends primarily on the numbers enrolled in public and private establishments. For this reason expenditure should be compared with enrolment. Another explanatory factor generally enters into the analysis; it has been found in practice that average unit costs are not identical in public and private education and that the quality of the service rendered must also be taken into consideration. In some countries, for example, private school teachers

[1] A similar analysis of capital costs can be found in the study by J. Vaizey and J. D. Chesswas, op. cit.

are on the average less highly qualified than those in the public schools, while in others private education is for the *élite*, very costly and greatly sought after.

To give some idea of orders of magnitude, table 5 shows the importance of the public and private sectors in some Latin American countries in 1964.

TABLE 5. Expenditure on public and private education (in millions of units of national currency)

Country	Public education		Private education			Total
		%		%		%
Bolivia	148.4	80.6	35.8	19.4	184.2	100
Colombia	1 161.9	70.7	481.8	29.3	1 643.7	100
Costa Rica	141.8	92.3	11.9	7.7	153.7	100
Chile	343.4	69.5	151.1	30.5	494.5	100
El Salvador	58.3	86.9	8.8	13.1	67.1	100
Guatemala	18.5	77.5	5.4	22.5	23.9	100
Haïti	21.9	74.5	7.5	25.5	29.4	100
Mexico	5 447.6	87.4	785.6	12.6	6 233.2	100
Paraguay	632.0	83.2	156.0	16.8	888.0	100
Venezuela	1 156.2	76.4	357.8	23.6	1 514.0	100

SOURCE Javier Lefort and Patricio Cariola, S.J., *Algunos aspectos del financiamiento de la educación privada en America Latina*, Paris, Unesco, 1966 (SS/Ed.Inv/6.B.)

Expenditure and unit costs by level of education. The breakdown of educational expenditure by level allows the analysis to be carried further in a number of directions.

For example, a consideration of the time pattern of educational expenditure for the State of Malaya (Federation of Malaysia) and Singapore shows that the share of second and third-level education grew at the cost of the first level from 1950 to 1964 (see table 6). The explanation is that secondary and higher education developed much later than primary education.

The comparison between recurrent expenditure and enrolments by level of education shows that average recurrent unit costs vary widely between the different levels. Along this line of thought, it is very useful to distinguish, in higher education, between the universities and the *grandes écoles*[1] and, in each university, between disciplines. Unit costs

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[1] Without trying to give a full definition of the *grandes écoles*, we may characterize them as follows, by reference to the French example: (a) entrance is generally competitive, whereas French universities have so far taken all holders of the *baccalauréat;* (b) resident studentships, which are a common feature of the *grandes écoles*, are quite rare in universities; (c) students of the *grandes*

TABLE 6. Educational expenditure by level (percentage)

Level of education	Malaya 1950	Malaya 1961	Singapore 1950	Singapore 1961	Singapore 1964
Pre-primary and primary	73.7	55.3	74.2	65.5	59.4
Secondary	15.6	18.1	18.1	20.0	22.1
Higher	0.6	6.6	—	11.5	13.1
Other types of education	—	5.4	—	1.0	1.2
Other ordinary expenses (not broken down)	10.1	14.6	7.7	2.0	4.2
Total	100.0	100.0	100.0	100.0	100.0

SOURCE Unesco, *Statistical Yearbook 1965*, table 22, Paris, 1966

TABLE 7. Recurrent unit costs in public education in France (national budget) (in 1963 constant francs)

Level of education	1952	1959	1964
Primary	305	374	578
Secondary	1 578	1 726	2 588
Technical	1 735	2 144	2 707
Universities	1 375	2 324	3 062

SOURCE R. Poignant, *Education and Economic and Social Planning in France*, Paris, Unesco/IIEP (In preparation.)

TABLE 8. Recurrent costs per student enrolled in the 'Universidad de la República', Uruguay, 1961 (in 1963 pesos)

Faculty		Faculty	
Agriculture	18 467	Engineering	7 502
Architecture	2 918	Medicine	5 617
Economics and administration	1 006	Chemistry and pharmacy	7 113
Law	787	Veterinary sciences	15 006

NOTE One peso = $USA 0.135

SOURCE Uruguay, Ministerio de instrucción pública y previsión social, *Informe sobre el estado de la educación en el Uruguay. Plan de desarrollo educativo. Tomo segundo*, Montevideo, May 1965

vary widely for each of these categories, as shown in tables 7 and 8.

The variations in unit costs by level of education and, in the universities, by discipline, are the result of a number of factors: the teacher/student ratio, the proportion of salary costs to total costs, higher salaries for more highly qualified teachers, varying proportion of social costs

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écoles often bind themselves by contract for several years after completing their studies; (d) the *grandes écoles* give both theoretical and practical instruction, the universities usually academic instruction only.

(dining halls, halls of residence, scholarships, etc.) in the total, more costly laboratory and demonstration room equipment in scientific and technical establishments, etc. To illustrate this point, it would be useful to break down costs by purpose and nature.

Costs by purpose. By breaking down the over-all statistics, it is generally possible to distinguish between: (a) direct costs, consisting of recurrent expenditure on personnel and material; (b) indirect costs of education (estimated on general management overheads and common services) and other costs which may be difficult to assign; (c) the costs of encouraging school attendance, called by some writers 'intervention costs' and by others 'transfer costs' or 'social costs'. These costs include expenditure on canteens, boarding facilities, transport and scholarships.

The analysis of costs by purpose, by isolating this last category, shows that:

1. Intervention costs help to explain the disparities in average costs between countries with very comparable levels of economic devellopment and education systems. As shown by table 9, if unit costs are higher in Dahomey and Mauritania than in the other countries considered, it is partly because the intervention costs are also much higher in those countries.

TABLE 9. Recurrent unit costs in primary public education in 1961 (in $ USA)

Country	Unit costs	Intervention costs
Cameroon	18.23	0.32
Central African Republic	26.11	1.11
Chad	22.53	2.94
Dahomey	66.05	12.36
Gabon	42.71	0.48
Mauritania	76.14	12.19
Upper Volta	51.94	3.42

SOURCE Nguyen Huu Chau, op. cit.

2. Intervention costs help to explain the disparities in average costs between levels of education in the same country. For example, in the Ivory Coast in 1964, intervention costs represented less than one per cent of recurrent costs in primary education and 46.4 per cent in higher education![1]

Costs by nature of expenditure. This breakdown is also well worth analysing.[2] In particular, there is one factor which generally accounts

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1. J. Hallak and R. Poignant (Monographies africaines, 8), op. cit.
2. See J. Vaizey and J. D. Chesswas, op. cit.

for more than 60 per cent of recurrent costs, namely salary costs. The importance of salaries justifies the place accorded to them in the study of forecast costs (Part Four). I shall confine myself in this paragraph to citing by way of illustration the trend of teacher costs and total costs by level of education in India between 1950/51 and 1965/66 (table 10).

TABLE 10. India: Unit costs per pupil and by level (in rupees)

Level of education	1950/51		1965/66	
	Teacher costs	Recurrent unit costs	Teacher costs	Recurrent unit costs
Pre-primary	37	55	35	55
Primary (part 1)	16	20	27	30
Primary (part 2)	28	37	40	45
Secondary	50	73	78	107
Vocational and technical	106	197	208	417
Special	55	109	81	135
Higher (colleges)	133	231	200	328

SOURCE Government of India, Ministry of Education, *Report of the Education Commission, 1964–1966, Education and National Development*, tables 19–10 A and 19–10 B, New Delhi, 1966

Table 10 shows, in particular, that the trends, in time and by level, of unit costs and teacher costs are very similar, and, in some cases, even parallel. But this is a rare example in which it has been possible by analysing total statistics to bring out significant correlations between average costs and their components. In general, as shown by an IIEP study on fourteen African countries,[1] it is none too easy to reach conclusive results from the comparison of unit costs, teachers' qualifications and teacher/pupil ratios. Too many factors seem to come into play to allow this level of aggregation.[2] A sound approach is to work on a sample of a few hundred establishments, taking care to use subsamples of 'homogeneous' establishments for each correlation desired. Methods of this kind are certainly costly, but the value of the conclusions to which they lead makes them attractive enough to be worth using in costing studies.

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[1] J. Hallak and R. Poignant (Monographies africaines, 3), op. cit.

[2] The following is an example: in one particular country, the unit cost per pupil was 100 in 1960 and 112 in 1965. Two extremes can be contemplated, and they make the analysis difficult:

1. Between 1960 and 1965 the same number of teachers continued to draw the same salaries, but the number of pupils fell by 12 per cent; in other words the pupil/teacher ratio fell by 12 per cent.
2. Under the teachers' salary structure, salaries went up by 12 per cent. (A schoolmaster, as a member of the public service, for example, changes his salary index every two years and his salary goes up even without any change in salary scales.)

In practice, neither of these factors operates exclusively and correlation studies are made harder by the existence of various factors which tend to offset each other.

Part Three

Methods of educational costing

Part Three deals with methods of estimating total expenditure and unit costs. Section 1 introduces a method of estimating educational expenditure on the basis of the published documents of financing agencies. Section 2 presents another method of estimation on the basis of the accounts of education establishments. Finally, section 3 discusses the choice of units and their significance.

It is hardly necessary to stress the value of this methodological review; the administrative officer not only plays, and must play, a very important role in designing, establishing and operating a network for the compilation of education statistics, but he must also constantly bear in mind the weak points in these statistics and the degree of reliance which can be placed upon them in the decision-making process.

1. Estimating expenditure on the basis of information derived from the sources of finance

In principle, this method is very simple; from an examination of the accounts of the different educational sources of finance, it is theoretically possible to estimate the amount of expenditure, i.e., the money cost, taking care, of course, to avoid any duplication.

Its practical application, however, comes up against a certain number of difficulties. We shall consider in turn the methods of estimating total expenditure and of breaking it down by level of education and nature of expenditure.

(a) *Total expenditure*

By way of a practical approach, it is convenient to review the position of each financing source by reference to table 11, taken from the 'Questionnaire on Statistics of Educational Finance and Expenditure, 1965', Paris, Unesco, Statistical Office, 1966.

TABLE 11. Educational finance by source. Fiscal year beginning in ...

Source of receipts		Budget allocation		Actual expenditure
A. *Public sources*				
1. Central or federal government departments dealing with education	......		......	
(a) Education departments		......		
(b) Other government departments		......		
2. Provincial or state authorities dealing with education	......		......	
3. County, city, district or other local authorities	......		......	
4. Foreign aid (received)	......		......	
B. *Private sources*	......		......	
1. Tuition fees	......		......	
2. Other private receipts from parents	......		......	
3. Private gifts, endowments, etc.	......		......	
4. Other sources	......		......	
Total		......		......

S.C.E.R.T., West Bengal
25/3, B. C. Road
Calcutta

Central government.[1] The central government contribution to educational financing is shown not only in the budget of the ministry of education, but also in the budget of other ministries responsible for certain types of training. For example, the ministry of labour or manpower is often responsible for technical and vocational training, the ministry of agriculture for agricultural education and rural training, the ministry of health for nursing colleges, the prime minister's office for schools of administration, and so forth.

Local authorities.[1] They play an important part in educational financing, especially in countries with a decentralized financing system such as the United States of America or the United Kingdom. Their contribution is rarely completely negligible, even in a country with a centralized financing system, such as France, where they bear certain costs of the public schools in their areas. But it is difficult to estimate their contribution to educational financing, owing to their large number and the fact that their budgets do not always show expenditure by purpose.

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[1] See J. Vaizey and J. D. Chesswas, op. cit.

It should be noted that there are generally reciprocal grants and flows of funds between the central government and the other public authorities (this is particularly so in Madagascar, between the State, the provinces and the communes) so that, in estimating educational expenditure, it is important not to count the same expenditure more than once (see figure 1, page 18).

External aid. In the developing countries, external aid often plays a paramount part in educational financing and must therefore be taken into account in assessing total costs. For example, the proportion of external aid in total educational expenditure in Senegal in 1964 was 42 per cent.

As already pointed out, in assessing external aid, allowance should be made for the cost of benefits in kind, such as the services of seconded teachers. The estimate of external aid will differ widely according as it is priced on the price structure of the donor country or the recipient country. Logically, it should be priced on the structure of the recipient country, but this approach is not always possible and may come up against serious conceptual difficulties.[1] For example, a fully qualified French teacher, seconded under aid arrangements to the Ivory Coast, represents, on top of the cost to France, a charge on the Ivory Coast Treasury of 1.1 to 1.4 million francs CFA. This amount alone is more than the cost of employing an Ivory Coast teacher of equivalent qualifications (but who, for the time being, is not available). It is difficult to maintain in such a case that the cost of the foreign teacher is less than it really is for the recipient country. The distinction between 'money cost from national resources' and 'total money cost' takes account of the price system of the donor countries in assessing foreign aid.

Another major difficulty in estimating aid relates to capital expenditure. If this expenditure, in a given year, is to have any significance, it should correspond as closely as possible to the volume of work completed. Capital expenditure from national resources can be estimated by reference to the budgets, but in the case of capital expenditure from external aid funds, the information, when it exists, relates, not to periods, but to projects or programmes; it is therefore difficult to estimate the precise amount of capital expenditure in a given year.

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[1] See J. Vaizey and J. D. Chesswas, op. cit.

Private sources. They cover four items in table 11, but few countries are in a position to supply information of sufficient precision, even at over-all level. It is, for example, extremely difficult to estimate the contribution of families without an appropriate case study or special statistical survey. In practice, since they cannot afford such a survey, the experts have to content themselves with approximate evaluations on the basis of available information.[1] For example, the rates of school fees by level and type of establishment, and the numbers of enrolments indicate the amount of fees paid; similarly, the proceeds of the apprenticeship tax give some indication of the contribution of enterprises towards financing vocational education. A figure should also be put upon other contributions in kind, such as school building by private individuals in the communes, and they should be included in the total of private contributions.

The size of the private contribution, which is imperfectly known, varies widely in different countries, according to social, economic and institutional factors. For this reason, in order to give greater significance to international comparisons of the total flow of educational finance, it is essential to develop, or to perfect as necessary, the methods of estimating private contributions.

(b) *Expenditure by type, level and nature*

1. As a start, the terminology used must be precisely defined; 'public (or private) educational expenditure' means expenditure from public (or private) funds; 'expenditure on public (or private) education' means expenditure in public (or private) education establishments, whatever the source of finance. Table 12 illustrates these definitions.

Private education establishments may be denominational, non-denominational or run by enterprises. In some countries there is another distinction according to the source of finance; in English-speak-

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[1] In this connexion, even the available information is often 'adjusted' to fit the desires or needs of its authors, thus making it unreliable and not to be used without caution. For example, private education establishments, even when they are willing to give information about cost per pupil, may enhance the cost with an eye to certain formulas for grants from public authorities.

TABLE 12. Source of finance for public and private education in Senegal in 1964 (in millions of francs CFA)

	Public education	Private education	Combined
Public educational expenditure	10 142	257	10 399
Private educational expenditure	—	164	164
Expenditure on public education	10 142	.	.
Expenditure on private education	.	421	.

SOURCE P. Guillaumont, D. Garbe, P. Verdun, *Les dépenses d'enseignement au Sénégal*, Paris, Unesco/IIEP, 1967, p. 37 (Monographies africaines, 5.)

ing Africa, for example, there are 'aided schools' and 'non-aided schools'. While it is relatively easy to get information about the aided sector, this is hardly true of the non-aided sector which may nevertheless in certain countries, such as Uganda, cover a by-no-means negligible fraction of the school population. This must be borne in mind in making international comparisons.

2. The breakdown of expenditure by degree (or level) presents no difficulties, in principle, in so far as the budgets of the financing sources are itemized by level. But this is not always the case. It may happen that all primary and secondary teachers' salaries are shown under the same budget item. In this special case there are two alternative methods of procedure; either by direct inquiry, or by assignment proportionally, for example, to the number of teachers by degree and the salary scales by qualification. In general, expenditure in the following cases may be difficult to break down: (a) pre-primary and primary; (b) primary and short secondary; (c) general and teacher training second degree education.

3. Under the recognized Unesco classification, taken from the abovementioned questionnaire, expenditure should be broken down by nature as follows.

Recurrent expenditure[1]
For instruction:
Salaries and allowances (teaching and non-teaching staff). School textbooks.
Other instructional expenditure, materials and supplies, etc.

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[1] It will be noted that administrative expenditure, in fact disclosed by a breakdown of expenditure 'by purpose', is not shown in this classification.

Other recurrent expenditure:
  Scholarships and grants: (a) for study in the country;
  (b) for study abroad.
  Welfare services, canteens, transport, boarding, sport.
  Maintenance of buildings and equipment.
  Operations of buildings (fuel, light, water and gas).
  Others.

Capital expenditure
Purchase and development of land.
School building, classrooms, laboratories and fixed equipment.
Other durable instructional equipment.
Welfare services, residence halls, etc.
Others.

Debt service

It is quite evident that, in the present state of statistical information, not all countries are in a position to supply a breakdown of this type, especially for each level of education. In this connexion, it may be recalled that the answers to the questionnaires on educational financing and expenditure statistics periodically sent by Unesco to its member countries are not always complete. There are at least four sets of reasons for this.

1. As already mentioned, there is a lack of information for certain sources of finance. For example, land may not have been bought, but merely given, by individuals or by the commune. It is then impossible to estimate its cost, which of course should be done.
2. Some expenditure traditionally comes under budget items which include services other than education. For example, in some countries the expense of school heating and lighting may be borne by the communes. But in the commune budgets there is only one single item for the heating and lighting of schools, town hall, hospitals, and so forth. Similarly, some municipal employees may hold a number of appointments and merely draw a single salary with small allowances. It is easy to multiply these examples, where, in the absence of individual case studies, the only way of breaking down expenditure is to assign it *pro rata* by appropriate methods.
3. For legal or institutional reasons, or more simply from habit, some expenditure is financed by block grants. Thus, the central government may, for example, make a block grant to private schools,

proportionate to the numbers enrolled, to be spent at the discretion of the governors.

4. Quite simply because education establishments and some private agencies are loath to supply statistics. The example of the non-aided schools in East African countries is particularly illuminating in this respect, since in some countries, even the exact number of pupils enrolled in the establishments is rarely given.

It must nevertheless be emphasized by way of conclusion that educational expenditure can be satisfactorily estimated from the published documents of the financing agencies for all public sources of finance, that is, in general, for the bulk of the expenditure, as well as its breakdown by nature and level. The estimate of expenditure by nature and level nevertheless calls for approximations at the sacrifice of precision. These approximations must then be supplemented, either by individual study, or on the basis of the accounts of the education establishments. We shall now proceed to consider this last method.

2. Estimating expenditure from the accounts of education establishments

In the face of difficulties in processing the documents on the sources of finance, the obvious solution is to make direct use of the accounts of the spending agents, i.e., the education establishments.

In spite of the necessity, demonstrated time and again in the past, of completing the over-all information by an analysis of establishment accounts, this method has, so far as we know, not yet been used on a wide scale except in very few countries. The reason probably is that three prior conditions must be satisfied.

First and foremost, there must be establishment accounts. But in practice, apart from the special case of large secondary and higher education establishments, it is rare, in some countries, to find establishment accounts at other levels.

Secondly, the accounts must be kept according to uniform, functional standards, if they are to be processed at national level. In practice, even when accounts exist, the method of presenting the statistics varies with the establishment; furthermore, the accounts are practically never established functionally and are not always easily adaptable to the needs of an analytical study.

Finally, the accounts must show the whole of the operating costs of the establishment if they are to be an effective basis for estimating educational expenditure. And yet it is well known that education establishments are not masters of the whole of their expenditure; in some cases the establishment budget represents only an infinitesimal part of its operating costs. This is particularly true of primary education, when teachers' salaries are not paid from the school budget.

It follows that the principle, methods and aim of processing establishment accounts are bound to differ in different countries and, in the same country, at different levels of education. In our general context, it is difficult to present a synoptic view for all countries and the most we can do is to point to certain conclusions.

1. However useful it may be, the method of estimating from establishment accounts cannot suffice on its own for the assessment of total and unit educational costs. On the other hand, it is hardly possible to make a valid cost analysis without the elements which can be periodically and regularly provided only by sound education establishment accounts. It is therefore essential to set up a uniform and functional accounting system, at least in establishments directly controlled or heavily subsidized by the public authorities.
2. The quality of information obtainable varies with the financing system. In public or aided establishments information as to the bulk of the expenditure is provided by the authorities; the establishment records serve either to describe the purposes to which grants are applied or to furnish particulars of certain expenses which escape the control of the authorities and are financed, for example, direct from tuition fees. In non-aided establishments it is the whole of the financial information which must be looked for from this source (even though it is difficult to see how, without appropriate legal measures, such inquiries would be possible in practice).
3. The statistical technique used may not be identical for all levels of education. The great number of primary establishments makes it essential to use sampling techniques. In secondary education, everything depends on the size of the country and the degree of development of the school system; it is sometimes possible to take an exhaustive census. For technical and higher education, in practically all developing countries (except for some special cases such as India) systematic surveys for each establishment seem necessary and possible. They are necessary, because statistical averages have little

significance here, owing to the abundance of special cases; they are possible owing to the small number of establishments.

4. While accepting the principle of diversified accounts, it is nevertheless useful to suggest table 13 as a frame of reference. This double-entry table breaks down educational expenditure by nature and by purpose. The principles on which it is constructed are quite simple. In the first place, the head of the establishment (or the accountant) should distinguish between expenditure on tuition and the other expenditure of his establishment: administration, transport, canteens and boarding, medicaments, etc. Secondly expenditure must be broken down by nature, distinguishing simply between salaries, material and supplies, maintenance, operating costs, provision for depreciation and capital expenditure. Some expenses can be broken down very easily; it is clear, for example, that the matron's salary will be shown under 'salaries-health' and the insurance premium on the establishment's motor vehicles under 'operating costs-transport'. Other costs, on the other hand, will be much less simple to place. This applies in particular to the cost of general service staff (watchmen, charwomen) and to certain operating costs (heating, lighting, water, etc.) There is no binding rule for the breakdown of this type of expenditure. The essential thing is to set clear rules and

TABLE 13. Standard breakdown of educational expenditure by nature and purpose

Nature	Purpose					
	Tuition	Administration	Transport	Canteens Boarding	Health	Total
1. Salaries						
2. Materials, supplies						
3. Maintenance						
4. Operating costs						
5. Depreciation[a]						
6. Recurrent expenditure						
7. Construction						
8. Equipment						
9. Capital outlay						
10. Total (6+9−5)						

[a] The amount shown as depreciation does not represent actual expenditure, but is a reserve for renewing fixed assets. It should be noted that (a) all items totalling recurrent expenditure concern the same period of time, the financial year, whereas the other items correspond to expenses covering generally periods of more than one year. For this reason, contrary to usual practice I have thought it more logical to treat depreciation as a recurrent outlay; (b) while it is usual to treat depreciation as an annual breakdown of capital outlay, it is hardly significant to add the amount of depreciation to the annual capital expenditure; that is why the grand total (item 10) is computed net of depreciation

to follow them in all establishments so as to make it easier to process the tables at national level. These rules might be framed by an *ad hoc* working party consisting of an administrative official, a statistician, a cost accountant and headmasters. The procedure would be to try out an accounting formula with a group of establishments and then to improve it before extending its application to all establishments.

3. The choice of units for costing[1]

The unit cost of a good or service represents the ratio between the cost (of production, sale or purchase) of a given quantity of goods or services and the quantity expressed as a number of units. The same applies to education. The methods of estimating money costs (by calculating expenditure) have been dealt with in the preceding sections and it is now time to discuss the choice of units.

It is worth recalling at the outset that the valuation of the unit cost of the service of education implicitly presupposes that the production of education can be quantified. Simplifying the question to the extreme and passing over in silence the difficulties of defining the whole aims of the activity of education, we can distinguish two ways of quantifying the production of education: (a) by reference to the number of examination successes or academic performance; and (b) by reference to attendance. Under (a), the simplest units to count are the number of examination successes, or, more generally, the number of pupils reaching a certain standard of education. Under (b), the practice is to consider either production capacity in terms of the number of teachers, classes or places, or attendance itself by reference to the number of pupil-years (or more simply of pupils) or the average daily attendance (ADA). We shall now consider the advantages and disadvantages of these different forms of unit costs.

Cost per graduate. The average cost per graduate (i.e., per successful candidate in the terminal examination at each level of education) is arrived at by taking a notional cohort of pupils or students, assessing the total cost of educating them until they have all quit the education sector and calculating the total number of graduates in the cohort. The average cost per graduate is the ratio of total cost to number of graduates. This process is not always possible, since it would virtually require statistics in the form of individualized records to be able to follow the cohort through time, together with cost statistics for each sub-group of the cohort and for each level of education. It is obviously illusory to hope for this kind of numerical data annually or even sporadically. In practice, therefore, a much simpler method is followed; after estimating the average number of graduates over a period of time, and the ratio between this average and actual enrolments, it is possible to calculate the total cost of education, and, consequently, the average cost per graduate. It was in this way that table 14 was compiled.

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[1] J. Vaizey and J. D. Chesswas, op. cit., p. 13–14.

TABLE 14. Average cost per graduate in a Central American country in 1964 (in $ USA)

Level	Annual cost of education	Length of cycle	Theoretical cost per cycle	Real cost per graduate
Primary	51	6	306	800
Secondary (general)	104	5	520	2 970
Secondary (vocational and technical)	217	5	1 085	5 285
University	391	5^a	1 955	9 739

NOTE *a* Average
SOURCE Restricted reports

As is clearly shown by table 14, in spite of the lack of precision of the estimates, the costs per graduate afford some valuable indications of the efficiency of education systems. In practice, the comparison of the figures in the columns showing the theoretical costs and the real costs indicates the volume of economic wastage from drop-out and repeating. It is, however, interesting to note that the assignment of the whole financial burden to graduates alone has the effect of substantially increasing the cost per graduate, since it disregards the other pupils who quit the education system after attaining a certain level.

Cost by level of education attained. For this reason, it is proposed that the theoretical procedure outlined above should be generalized by considering not only graduates but also pupils and students who quit the system after completing one, two, three, etc. years of study. Conceptually, this kind of precision in the estimates is necessitated by the well-established fact that those who quit the system before graduating have nevertheless acquired appreciable education and knowledge, which is appreciated, in particular, by their prospective employers. It is therefore only fitting that they should be taken into account in costing. (See the particulars given in the appendix.)

Unit cost per pupil. This is the formula most currently used. Several illustrations are given throughout this booklet. It is the ratio between recurrent money costs and enrolments; recurrent costs only and not capital costs are taken, since the ratio between capital expenditure in any given year and the number of enrolments in that year would have little significance.

Cost per average daily attendance. In some countries, and to allow for the fact that the number of enrolments does not always match the actual attendance, another formula has been adopted, namely that of dividing recurrent costs by a magnitude representing the number of pupils attending each day, i.e., the 'average daily attendance'. Thus, Canada and the United States of America, for example, publish for primary and secondary education costs by average daily attendance.

Capital cost per place. For capital expenditure, it is significant to use the formula of cost per place by relating the cost of construction and initial equipment to the number of places provided. This cost is very useful in making projections. The techniques habitually used in the choice of investments can easily be applied to school building by comparing the annual cost per place of different projects, the costs being estimated in the light of the economic life of the different projects and the appropriate cash flow discount rate.

Average cost per class. Economists are increasingly expressing their preference for average cost per class rather than unit cost per pupil, because of the relative uniformity of the unit, namely the class, and the ease with which this average cost can be used in projections.[1] It should, however, be pointed out that this formula means that the definition of a class must be standardized in any one country (and between countries for the purposes of international comparisons) although everybody knows that the size of classes varies between countries and in the same country at different levels of education.

[1] One of the reasons for their preference is that enrolment may vary according to the level of classes because of repeating and drop-out.

In one sense, the formula of average cost per class runs counter to the present trend of research in comparative education since the specialists propose that, in secondary education and above,[1] pupils should no longer be rigidly herded into classes but should be divided into groups of varying sizes for different types of activity (practical work, discussion groups, etc.) and different subjects (compulsory or optional, etc.). The estimation and significance of cost per class becomes less evident in this future conception of schools. It must nevertheless be recognized that, however desirable they may be, readjustments of this kind are hardly feasible for a number of years to come, and that for these reasons the formula of cost per class will retain all its attraction for some economists.

Average recurrent cost per teacher. This formula is mainly of interest to costing researchers and specialists because of its sensitivity to the major variable behind cost trends, namely teachers' salaries. The cost per teacher can obviously not be used without precaution, especially in secondary and higher education where the number of teachers per 'class' varies according to so many factors that it is hardly possible to make any significant comparisons, either by time or region or internationally.

Having thus presented a few aspects of costing methods, let us now consider the role of cost analysis in planning.

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[1] Sometimes even starting with primary education, as in some cases in the United States of America.

Part Four

Costs and planning

The consideration of costs in connexion with the analysis of the financial aspects of education has shown that future trends may be inferred from the study of the past. But current projection techniques are not confined solely to the extrapolation of the past; they are becoming more and more complex as plans become more elaborate. Thus, the search for realistic planning targets will be based on methods of evaluating the 'spontaneous' trends of unit costs and procedures for comparing the cost of different targets with the capacity to finance them.

A simple way of presenting these techniques is to explain them with the aid of concrete examples. Going to the extreme, it would almost be necessary to construct a model plan, explaining costing methods at each stage in its preparation. Without wishing to introduce any rigidity into the presentation, or necessarily seeking to exhaust all the problems of method, the following sections are designed to present some of the ways in which costs can be used in educational planning at the different stages of constructing the plan. It may, however, be useful to preface the discussion by very briefly recalling the procedure for the preparation of a plan.

1. The planning process: a provisional pattern

The process of preparing plans varies widely from country to country. There are many reasons for this: the extent to which the tradition of planning is well established, the existence of an economic plan and the extent to which the education plan forms an integral part of the economic plan, the strength or weakness of the statistical services, the level of administrative development, the characteristics of the school systems, public and private, etc. It would therefore be presumptuous on our part to try to reduce planning procedures to a simple pattern, since these procedures are bound to be complex and adapted to the institutional, economic and social conditions of the country concerned.

We have nevertheless felt it useful to present in this section the stages in planning which most closely affect the costing specialist, while bearing in mind the somewhat general character of this presentation. The procedure chosen is the provisional-pattern type, as illustrated by figure 2, showing the different phases.

The first phase is an analysis of the present state of the education system, based on the fullest possible data not only on the numbers of enrolments by level and type of education and the total and unit costs previously described, but also on the quality of the education service, such as the existing standards for the size of classes and schools, teacher/pupil ratio, cost of maintenance and supplies per pupil, cost of living indexes in boarding establishments, etc.

The second phase, of setting provisional targets, to some extent, though not entirely, follows from the first. The first targets set also result partly from exogenous data on the future trend of the population of school age and migratory movements, from future needs of the economy for skilled manpower (consistent with the targets of the economic development plan), from the trend of social demand, and partly from special projects whose long-term completion seems already certain. The targets relate to quantitative and qualitative trends, such as changes to be made in the 'technical coefficients' (e.g., standards of construction and equipment) or the percentage of qualified teachers in primary education.

The third phase is of more direct concern to us; it consists of constructing a set of unit costs in order to assess the cost of the plan. For this purpose, working assumptions must be established for the trend of educational prices.

The fourth phase, that of estimating the cost of the plan, should present no inherent difficulty, since it flows direct from the second and third phases. In order to form a relatively precise judgement whether the plan is realistic, however, and, if necessary, to set priorities, the cost of the plan must be estimated by drawing certain distinctions, for example, between sources of finance, or between the costs specific to the targets of the plan and other costs, so as to make it clear what proportion of the expenditure may be the subject of policy options.

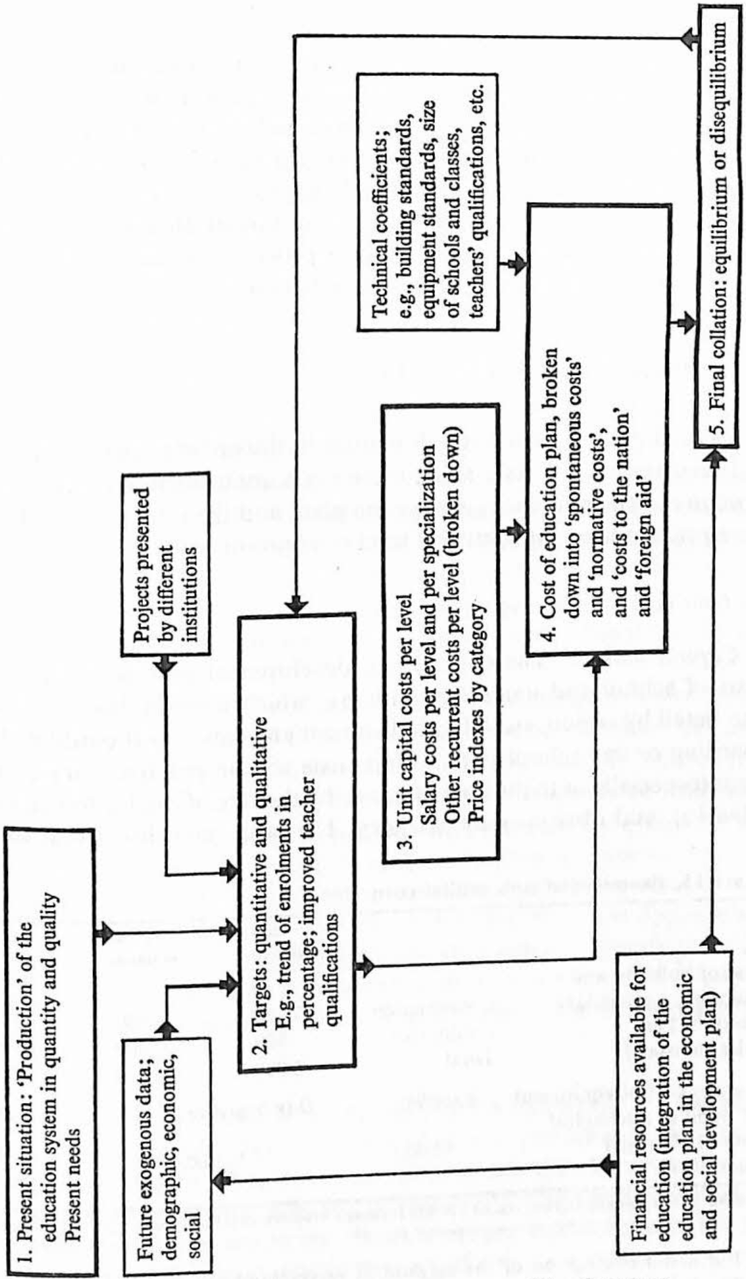
1. Present situation: 'Production' of the education system in quantity and quality
Present needs
Future exogenous data; demographic, economic, social
Projects presented by different institutions
2. Targets: quantitative and qualitative
E.g., trend of enrolments in percentage; improved teacher qualifications
3. Unit capital costs per level
Salary costs per level and per specialization
Other recurrent costs per level (broken down)
Price indexes by category
Technical coefficients; e.g., building standards, equipment standards, size of schools and classes, teachers' qualifications, etc.
4. Cost of education plan, broken down into 'spontaneous costs' and 'normative costs', and 'costs to the nation' and 'foreign aid'
Financial resources available for education (integration of the education plan in the economic and social development plan)
5. Final collation: equilibrium or disequilibrium

FIGURE 2. *Process of preparing a plan: a provisional pattern*

The fifth phase is the final collation of financial requirements with the resources proposed under the economic plan. If they match, it is sufficient to revise the plan in finer detail and the targets can be finally accepted. If, on the other hand, they appear out of balance it becomes necessary either to review the block appropriations for education, (upwards or downwards), or to vary the targets themselves. In this event, the first iteration begins, and the process is repeated as often as may be necessary to bring the plan into balance.

2. Projection of unit costs

In preparing the plan, a distinction must be drawn between capital costs and recurrent costs. As a start, these costs are estimated on the price structure of the reference year for the plan, and then, by the use of relative price indexes, at a general level of constant prices.

(*a*) *Unit costs for the reference year*

1. *Capital outlay.*[1] The educational development plan includes forecasts of school and university building, which must be broken down into detail by region, size of establishment and category (boarding, day boarding or day schools, etc.). Unit costs will, in practice, vary by regions (especially as to the cost of land), by the size of establishment (see table 15), and obviously by category. The table also shows that there

TABLE 15. Examples of unit capital costs (1964)

		500 children	1 000 children	2 000 children
Cost of building and equipping a secondary school in Peru (soles thousand)	Construction	2 780	4 520	7 150
	Equipment	300	600	850
	Total	3 080	5 120	8 000
Average cost of equipment per pupil in a technical school in Senegal (francs CFA)	*Boarding*	*Day boarding*		*Day*
	85 000	50 000		27 000

SOURCES P. Guillaumont, *et al.*, op. cit., p. 47; Peruvian Ministry of Education (Unpublished notes.)

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[1] For a full description of the method of projecting capital costs, see J. Vaizey and J. D. Chesswas, op. cit.

are differences not only in construction costs but in unit equipment costs as well.

It is therefore clear that capital costs vary considerably with the type of establishment. In view of the fact that in preparing plans it is scarcely possible to go into any very great detail, we are obliged to content ourselves with capital costs (by class or by establishment) for a few major categories of establishment.

The following is an illustration of the statistics of unit capital costs which may usefully be prepared.

1. *Primary*. For two or three major regions, for three sizes of establishment, with and without canteens.
2. *Secondary*, short/long. For a few major regions, for three sizes of establishment, boarding, day boarding and day.
3. *Technical and vocational*. In some countries unit capital costs must be studied separately for each project. In other countries, the following distinctions must be drawn; short/long, for a number of regions, for two sizes of establishment, boarding, day boarding and day.
4. *Higher*. Schools in universities, *grandes écoles*. Separate file for each project.
5. *Comments*: (a) Construction costs and initial equipment costs must be supplied separately; (b) Information can be obtained not only from the national education authorities, but also from building contractors themselves; (c) The cost of land can only be estimated notionally for each region (primary and secondary), except in the case of actual costs for specific projects (higher education); (d) The units chosen may be the square metre, the pupil, the class or the establishment. We regard the square metre as the most appropriate unit, since technical coefficients make it possible to specify the relations between the area in square metres and the number of enrolments, and to define construction and equipment standards and their cost.

2. *Recurrent costs*. These costs during the reference year for the plan give merely a partial indication of the recurrent unit costs of the investment projects included in the plan. In practice, the characteristics of the school system as it exists at the beginning of the period influence the average recurrent unit costs. These averages, calculated on a specific school network, obviously do not represent the average recurrent unit costs for new projects. Furthermore, the targets of the plan include

the variation of certain technical coefficients, for example, an increase in the proportion of qualified teachers or a reduction in the average teacher/pupil ratio; variations of this kind cannot fail to influence the average level of recurrent unit costs for the whole of the school and university system at the end of the planning period.

It is therefore essential to assess the incidence of quantitative and qualitative targets in estimating average recurrent unit costs for the reference year.

Quantitative targets. For example, the expansion of the school network, changing the distribution of schools by size of establishment, has the effect of modifying the average recurrent unit costs. In this connexion, table 16 shows the sensitivity of certain recurrent costs to the size of establishments. Similarly, any change in the distribution among town schools and country schools modifies the national average unit cost (see table). It would be easy to multiply examples. What must be constantly borne in mind is that, in many developing countries the expansion of enrolments is sometimes accompanied by a quite appreciable increase in average unit costs due to the fact that enrolment expands first in areas where the population is denser and the costs are relatively lower. As soon as the targets of the plan embrace very scattered populations, average unit costs increase considerably.

TABLE 16. Teaching cost per pupil in a sample of 595 Irish national schools, by number of teachers and centrality of school, 1961/62

	Size of school (number of teachers)						
Centrality	1	2	3	4–6	7 and over	All schools	Average salary per teacher (£)
	Teaching cost per pupil (£)						
Cities	21	31	22	19	12	13	669
Large towns (population 1 500 and over)	51	27	20	16	14	15	659
Small towns	49	26	21	16	—	20	720
Villages	39	21	22	21	—	22	709
Rural sector	34	27	23	20	—	26	688
Total (average)	37	26	22	18	12	17	679
Average salary per teacher (£)	631	708	733	719	632	679	.

SOURCE OECD, *Investment in education. Report of the survey team appointed by the Irish Minister of Education, in October 1962*, table 9.9, p. 235, Dublin, Stationery office (undated)

Qualitative targets. Many countries put the improvement of the quality of the service rendered in the forefront of the targets of the education plan; this can only be welcomed. What is regrettable, however, is that, owing to financing difficulties, these targets are rarely achieved. In practice, high quality education is an expensive commodity, and in any planning which aims at being precise and realistic, any qualitative modification in the technical coefficients must be taken into account in establishing average unit costs for projections, on pain of falling into the sin of inconsistency and appreciably underestimating the cost of the plan, which, for want of precise and realistic forecasts, will finally prove to be too ambitious.

Two very simple examples are enough to show the nature of the corrections which must be made in average recurrent unit costs.

Example 1. In a given country:

65 per cent of pupils are taught by unqualified teachers at a unit cost of . . . . 100 (units of account)

35 per cent of pupils are taught by qualified teachers at a unit cost of . . . . 150 (units of account)

The average unit cost is 117.5 units of account per teacher.

The target of the plan is to improve the quality of teaching so that 50 per cent of pupils are taught by qualified teachers. All other things being equal, the average unit cost of teachers becomes 125 units of account per teacher.

Example 2. In primary education the present teacher/pupil ratio is 60 and the unit cost of teachers per pupil is 200 units of account. The target of the plan is to improve teaching standards by reducing the teacher/pupil ratio to 50. All other things being equal, this means that the unit cost of teachers per pupil goes up from 200 to 240 units of account.

It follows from these examples that the preparation of recurrent unit costs for the reference year means that from the outset account must be taken of the quantitative and qualitative targets of the plan. The consequence is that the recurrent unit costs must be sufficiently detailed to lend themselves to adjustment in the light of the targets. In particular, a distinction must be drawn between: (a) unit costs of administration; (b) unit costs of teaching staff; (c) unit costs of maintenance; (d) unit costs of running canteens; (e) unit costs of aid to students; (f) etc.

It seems useful to provide recurrent unit costs for all the headings indicated above for capital costs. But it is quite evident that the number of unit costs which can be carried to the over-all level in preparing the plan cannot be very great. In practice, it will be limited by the degree of precision of the projections ('in volume') of the development of the school system. The considerations set out above nevertheless show that cost projections, if they are to be significant, must flow from the preparation of a fairly detailed set of unit costs relating to sufficiently homogeneous elements.

(b) *Educational price indexes*

In general, unit cost projections are made at a general level of constant prices. Apparently, therefore, it is hardly necessary to allow for price trends. Nevertheless, each of the goods and services which enters into the production of education has its individual price trend, with the result that the average price index of the service of education varies even at the general level of constant prices; unit costs must therefore be adjusted in the light of this trend. The indexes which reflect these variations are usually called 'relative price indexes'.

For example, if over a given period, the general price index goes up by 12 per cent and the price index of a good by 18 per cent, the relative price index of that good (at a general level of constant prices) goes up by 5 per cent ($118/112 = 1.05$).

In the educational sphere certain price assumptions are usually made for certain categories of expenditure, for example:

1. The salaries of teachers (and other manpower employed in education) follow, at constant prices, the national *per capita* income.
2. The cost of material and minor equipment follows the general price index, possibly with some lag.
3. Maintenance and social service costs (canteens, boarding facilities) follow the general price index for services, i.e., generally a little above the general price index but below the growth rate for national *per capita* income.
4. Capital outlay is rarely studied; the least that can be done is to take the price index for gross fixed asset formation adopted in the economic development plan.
5. Price indexes for land are rarely taken into consideration. This omission has little importance in the case of school building projects

in rural districts in developing countries, where the cost of land is sometimes little or nothing. But the price of urban land is unquestionably rising steeply in nearly all countries where private ownership is still recognized. In these cases the price index for land should be included in the forecasts for fear of underestimating the cost of the plan.

To sum up, the unit costs for the reference year should be revised in the light of the relative price indexes before they can be used to estimate the total cost of the plan. For an idea of orders of magnitude, table 17 shows the size of the corrections which may be envisaged in a five-year plan. They amount to more than 12 per cent over five years, or about 2.4 per cent per annum. This shows the need for this kind of adjustment in costing education plans.

TABLE 17. Relative prices affecting the breakdown of expenditure by nature: a hypothetical case

	Percentage of expenditure (terminal year of plan)[a] (1)	Relative price index (2)	Product columns 1 and 2 (3)	Percentage of expenditure (terminal year of plan)[b] (4)
Land	5	150	750	6.8
Building	7	[c]105.1	1 051	9.4
Equipment	3			
Salaries	60	[d]113.1	6 786	60.4
Supplies	5	95	475	4.2
Others	20	107.7	2 154	19.2
			11 216	

[a] Price structure reference year

[b] Price structure terminal year

[c] Price index, national building costs, end of plan, 105.1

[d] Annual growth rate of *per capita* income; 2.5 per cent

Practical note. The scarcity of available information or the absence of an economic plan in many countries may make this adjustment of unit costs look like a mere academic exercise. It is indeed extremely difficult to lay hands on a sufficiently detailed set of assumptions on relative prices. But, owing to the 'weight' of salary costs in total costs, it seems that, without aiming at perfection in estimating, it should be possible to improve them simply by studying as precisely as possible the trend of the relative price of wages, accepting that the other relative price indexes follow the general price index. Approximations of this kind, however regrettable they may be, nevertheless help in arriving at estimates which are more acceptable because they are nearer to the truth.

In view of the essential role of salaries in making projections, the following section is devoted to studying an example of the trend of the relative price of salaries in Uganda from 1960 to 1965.

3. Salary costs: the example of Uganda

The object of this section is to demonstrate the order of magnitude of the trend of salary costs at constant prices. The exercise is based on concrete data on the salaries of schoolmasters in Uganda. The analysis relates solely to the influence of two factors on the rise in salary costs: (a) the automatic advancement of teachers, and (b) revisions in the salary scale.[1,2]

(a) *The facts*

Schoolmasters' salary scales were reviewed in 1960, when the minimum was raised from £117.5 a year to £150 and the maximum from £262.5 to £300. In 1964 there was a further review of salary indexes under which each schoolmaster was awarded three extra steps on the salary scale; the minimum basic salary thus went up from £150 to £168. Under their charter qualified teachers go up one step every year until they reach the ceiling. In addition, there were 500 unqualified teachers who were paid a fixed salary of £108 in 1964. The 1964 reforms increased this to £126. Table 18 gives some particulars of the pattern of levels of remuneration in 1964.

(b) *Cost of the reforms*

1. Table 18 shows that the average annual salary is £190.3. Assuming that there had been no reform in 1964, what would have been the average annual salary level in 1965, under the rule of automatic advancement? To answer this question, two assumptions must be made: (a) on

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[1] This obviously does not mean that other factors affecting the rise in salary costs can be disregarded, such as the pattern of qualification or the increased employment of women. The reader is referred on this subject to: P. H. Coombs, *The World Educational Crisis: A Systems Analysis*, New York/London/Toronto, Oxford University Press, 1968.

[2] In booklet number 6 of this series, the authors have adopted more general working assumptions, since the bulk of the statistics used here were not available at the time it was written.

TABLE 18. Breakdown of teaching staff by level of remuneration (salaries in £ sterling per annum)

Salary *per capita*	1964 Number (1)	1964 Total salary (2)	One year later Number (3)	One year later Total salary (4)
300	286	85 800	308	92 400
288	68	19 584	77	22 176
276	41	11 316	49	13 524
264	143	37 752	253[a]	66 792
252	166	41 832	88	22 176
240	90	21 600	246	59 040
228	252	57 456	263	59 964
216	270	58 320	537	115 992
207	551	114 057	585	121 095
189	600	113 400	590	111 510
180	605	108 900	559	100 620
174	573	99 702	944	164 256
168	423	71 064	280	47 040
162	287	46 494	143	23 166
168	545	91 560	500	84 000
156	145	22 620	. . .	. . .
Total	5 045	1 001 457	5 422	1 103 751
Unqualified 108	500	54 000	500	54 000
Total	5 545	1 055 457	5 922	1 157 751

[a] The relation between the figures from this point in ascending order and the corresponding figures for the preceding year is complicated by the fact that some salaries are increased in mid-year

SOURCE Ministry of Education, Uganda

the number of new teachers, taken at 500 qualified teachers at £168 a year, (b) on the rate of wastage, taken as a uniform rate of 2.5 per cent.

Column 3 of table 18 shows the theoretical new distribution of teaching staff by *per capita* salary. It appears that the new average salary is £195.5; the cost of automatic advancement is 2.7 per cent. It may be noted that in many developing countries the situation is far from being equally favourable, in the sense that the proportion of unqualified teachers is much higher. In order to improve the quality of teaching, these countries are trying to establish a scheme for accelerated training 'on the job' and to step up the output of teacher training schools. Measures of this kind can certainly only be regarded with favour, but they are likely to have a very heavy impact on costs. For example, suppose that there are 5,000 unqualified and 5,045 qualified teachers[1] in the country, that the teacher training schools produce 500

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[1] The distribution of teachers is assumed to be the same as in table 18.

TABLE 19. 1964 reform. Revised salary scale (in £ sterling)

Year of qualification	Numbers 1964 (1)	Numbers 1960 (2)	Salary scale Before reforms (3)	Salary scale After reforms[a] (4)	Total salary Before reforms (5)	Total salary After reforms (6)
1939	26	29	262	300	58 164	66 600
1940	18	20				
1941	33	37				
1942	51	57				
1943	38	42				
1944	34	37				
1945	26	38	249	288	16 932	19 584
1946	37	40				
1947	23	25	235	276	5 875	6 900
1948	30	33	230	264	16 790	19 272
1949	38	40				
1950	41	43	222	252	9 546	10 836
1951	50	28	208	240	5 824	6 720
		25	198	228	24 552	28 272
1952	93	99				
1953	166	88	187	216	16 456	19 008
		88	180	207	35 640	40 986
1954	175	110				
		70	159	189	27 984	33 264
1955	167	106				
		66	152	180	55 784	66 060
1956	546	301				
		261	148	174	83 768	98 484
1957	554	305				
		266	145	168	89 175	103 320
1958	639	349				
		309	138	162	85 698	100 602
1959	573	312				
		272	131	156	35 632	42 432
Total	3 358	3 486			567 820	662 340

[a] The conversion is complicated by the fact that teachers completing their studies in a given year were integrated in the scale at different steps according to their qualification on admission to teacher training school. Arbitrary divisions have been made to establish the index

SOURCE Ministry of Education, Uganda

schoolmasters a year and the in-service training scheme an equal number. The average salary would then be £153.4 in 1964 and £161.5 in 1965. The rise is 5.2 per cent.

2. The incidence of the 1960 reform can be usefully measured by reference to table 19. For the sake of simplicity, unqualified teachers are

disregarded. Furthermore, on the basis of the information available in 1964 and of assumptions on the wastage rate in 1960 and 1964[1] the wastage for 1960 has been calculated (table 19, column 2). The average salary is then estimated on two assumptions on the basis of the old and new salary scales. As the table shows, the effect of the reform was to increase the average salary by 18.8 per cent.

3. As already indicated, another reform was introduced in July 1964, under which the minimum salary was raised to £189 a year and the maximum to £354, by awarding all teachers three steps on the salary scale. Table 20 shows the incidence of this measure; average salaries increased by 15.2 per cent.

TABLE 20. 1964 reform. Revised salary scale (in £ sterling)

Year of qualification	Numbers	Salary scale		Total salaries
		Before	After	
1939–1947	286	300	354	101 244
1948–1949	68	288	336	22 848
1950	41	276	318	13 038
1951–1952	143	264	300	42 900
1953	166	252	288	47 808
1954	175	240	276	24 840
		228	264	44 352
1955	167	228	264	
1956	546	216	252	89 964
		207	240	13 200
1957	554	189	228	135 888
1958	639	180	216	131 112
1959	573	174	207	125 235
1960	573	168	189	108 297
1961	272	162	180	75 960
1962	297	166	174	73 428
1963	545	168	189	103 005
Total				1 153 119
Unqualified	500	108	126	63 000
Total	5 545			1 216 119

SOURCE Ministry of Education, Uganda

4. To sum up, all other things being equal, the incidence of the automatic advancement rule is an increase of 2.7 per cent per annum in average salary. In addition, two reforms, one in 1960 and the other in 1964, have had the effect of raising the average salary by 18.8 per cent

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[1] Wastage rate: 1939–1943 = 12%; 1944–1948 = 9%; 1949–1953 = 6%; 1954–1959 = 3%.

and 15.2 per cent, which means that between January 1960 and September 1964, the average salary rose by about 52 per cent.[1] The retail price index at Kampala, according to United Nations statistics, being 111.5, average salaries increased in real value by 36 per cent over the period 1960 to autumn 1964. In practice, with a view to assessing the order of magnitude of the relative price index, it is fairer to consider the incidence of a single reform only. In this case the salary increase in real values is about 18 per cent over four years, or 4.5 per cent per annum.[2] (It may be noted that this rate is higher than that taken in the hypothetical example in table 17.)

This analysis of two factors in the rise of salary costs clearly shows the often very modest character of the assumptions as to the growth of unit costs adopted in planning. It should induce administrators to be very critical and very strict in scrutinizing the plausibility of cost projections submitted to them. By insistence on the realistic character of assumptions as to the trend of costs, the financial possibilities of the country can be appreciated at a very early stage, thus facilitating self-consistent and optimal decisions on the development of its education system.

4. Total cost of the plan

This is the fourth phase of each iteration, as set out in figure 2, and one of the most delicate for the educational planner, since it deals with concerns of several different orders and must supply economic criteria to help the decisions of the authorities responsible for educational development. Furthermore, the expression 'total cost of the plan' has a number of different meanings.

1. It may mean the total capital and recurrent expenditure to be effected during the period covered by the plan. By a combination of unit costs and quantitative targets, this cost can be calculated without special difficulty.

2. It may mean the total capital and recurrent expenditure to be effected during the period covered by the plan, with the exception of

[1] $118.8 \times (102.7)^4 \times 115.2 = 152.2$.

[2] $\frac{118.8 \times (102.7)^4}{111.5} = 118.5$.

expenditure not resulting from the targets of the plan and relating, for example, to the running of the school network as it existed before the plan. An implied distinction is thus made between expenditure which would have been incurred spontaneously, or 'spontaneous costs' and other costs which might be called 'normative costs'. As the example of Tanzania will show, the value of this distinction is evident; the option between different items of expenditure in order to balance financial needs and resources generally relates to normative costs only. The difficulty is to distinguish between 'spontaneous costs' and 'normative costs' since the latter include not only the projected capital investments and the consequent recurrent costs, i.e., the cost of quantitative targets, but also, as already indicated, the cost of 'qualitative' targets, i.e., of projected modifications in technical coefficients. With the aid of a few assumptions, however, this distinction can be made.

3. The expression 'total cost of the plan' may mean the total capital and recurrent expenditure projected for the terminal year of the plan. The value of this assessment lies in specifying the tendencies and growth rate of the financial effort involved in implementing the plan, and in providing basic data for the preparation of future plans. It is also quite evident that this frame of reference is very valuable in making a sound comparison between financial needs and resources in order to test the feasibility of the plan. There is, however, one major reservation to be made in respect of this method of approach; it may conceal the financial difficulties which will have to be faced during the intermediate years of the plan. The following example illustrates the gist of the problem:

Year:	0	1	2	3	4	5
1. Regular growth of financial resources for education, 6 per cent per annum	100	106	112.4	119.1	126.2	134
2. Trend of capital and recurrent expenditure:						
Recurrent	80	84	88.2	93	99	107
Capital	20	23	30	30	28	27
Total	100	107	118.2	123	127	134
3. Financial surplus (+) or deficit (−)	0	−1	−5.8	−3.9	−0.8	0

NOTE Figures in millions of $ USA

The plan includes a capital investment time-table of $140 million over five years, or an average of $27 million a year. However, owing to the very nature of the capital projects and the take-off difficulties of the plan, the volume of capital outlay reaches a maximum of $30 million in the second and third years of the plan. It is true that recurrent expenditure does not rise very fast at the beginning of the plan, owing to the relation between capital outlay and operating costs. Nevertheless, the total recurrent and capital expenditure exceeds the available resources and financial difficulties will emerge during the currency of the plan, even if, during the terminal year, needs and resources seem to balance.

4. From this purely imaginary and schematic example, it follows that it is necessary to ensure the equilibrium of total cost not only in the terminal year, but also in all the successive years of the five-year period. This is what is usually called the study of the 'phasing' of the plan. In some countries this is done; in others, it is difficult, owing to the cumbersome procedures and the numerical weakness of the planning teams. Yet other countries have formed the habit of implicitly assuming that capital outlay will grow steadily, thus avoiding the difficulties shown in the above example. This working assumption can, moreover, be regarded as very sound, except in the case of special capital investment projects on a very large scale compared with the country's total capital outlay on education. These obviously constitute an exceptional case which calls for a specific study of the annual time-table of capital expenditure.

5. One last distinction is worth drawing in estimating the 'total cost of the plan', namely between the 'total cost' to the nation, and the cost financed from external aid. As pointed out in Part One, on the concept of cost, the best way of adapting the economic concept of cost to the education sector is to assign the cost of education to the national community as a whole. But in many developing countries, a large part of educational expenditure is financed by external aid; in forecasting the development of school systems, assumptions are also made about external financing. The two sources of finance—national and external—differ in character; one is more hazardous than the other, or, at least, part of the resources may be assumed to be less dependent on the national will. In order to assess the feasibility of the plan, or to identify the targets which can be achieved in any event and those which largely

depend on external contributions, the cost from national resources and the cost from external resources must be distinguished in the 'cost of the plan'. In this connexion, two sets of difficulties will arise: (a) The first is political in character; it is not always politically easy or opportune to show the proportion of external finance in the plan, unless, indeed, it is guaranteed from the outset. While recognizing that the publication of information about sources of finance for the plan raises certain difficulties, the fact nevertheless remains that costs should be studied according to the source of finance, even if this remains purely internal to the planning authorities; (b) The second difficulty is technical in character and harder to overcome. In practice, apart from special projects, the financing of which is guaranteed from the outset of the plan, or expenditure habitually financed externally—the assumption of continuity in financing being itself hazardous—it is generally difficult in the early stages of preparing the plan to distinguish clearly between the sources of finance for each head of expenditure.

For these reasons, the most realistic procedure—except for certain countries and in certain quite special circumstances—seems to be to prepare a plan which can be financed entirely out of national resources. Such a plan would also include variants for varying assumptions as to the volume of external aid.

It is, however, true that, for certain countries, and for projects which are particularly attractive to external aid agencies, it is sound strategy to include in the education plans one or two large-scale projects for which the authorities can hope to secure massive and sustained support from abroad. In the absence of such an expedient, the country might find itself condemned to lag along with only a modest expansion of its education system, for want of boldness and imagination in preparing its plan.

5. Final collation[1]

Planning means '...establishing a sort of order of priority among different categories of capital investment, respecting the necessary consistency between the efforts made in the different sectors, and, on this basis, concentrating on those achievements which are indispensable or which are most desirable, or in short, taking the responsibility of defining and accepting the alternative which affords "the lesser evil"...'[1]

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[1] The reader may profitably consult booklet number 2 in this series: R. Poignant, op cit., chapter 2, p. 41 and following.

As we have already seen, the process of collation is involved, expressly or by implication, in every phase of planning. From the moment of setting the first targets and making the first assumptions on the trend of variables or coefficients, the planners take account of certain orders of magnitude which must not be exceeded. At a later stage, in costing the plan, a balance always has to be struck between various technical or political factors. Thus, the process of collation is something more than a stage in planning, it is rather a mental attitude which should inspire the planner.

This being said, the phase which we have called 'final collation' comes when the education plan as a whole is collated with other plans for public utility services or with the economic and social development plan of which it forms an integral part.

In this respect, the final collation is, in a sense, the 'moment of truth' in planning, the moment when hard decisions must be made between various targets, all of which have priority. Should the development of primary education be sacrificed in favour of secondary and higher education? Must it be accepted that schools continue to be under-equipped or that teacher training is incapable of improving qualifications, however slightly? Can the plan disregard, or should it disregard, the problem of handicapped childeren, or fail to meet the social demand for a network of better-equipped and better-stocked school libraries? These represent the kind of question which faces educational administrators as soon as the cost of the plan seems greater than the available resources.

Whatever answer is given, whatever option is made, some group or groups in society will believe rightly or wrongly that they have been sacrificed or less favoured than others. The political dimension of this phase in planning then takes on its full meaning. Collation often seems to be the source of public discontents and to facilitate the swing away from some political party in power. Planners would be well advised not to under-rate the importance of this phase; it largely depends on the success or failure of collation whether or not the plan becomes 'an ardent obligation'.

In this sense, the final collation phase lies at a 'crossroads' where various centrifugal forces are generated by the interplay of the technical, political, social and institutional components of the plan. To revert to the technical aspects of collation and to give concrete examples of the type of adjustment which may have to be made I have chosen two examples, one from among the industrialized countries, France, the other among the developing countries, Tanzania. In one case the options affect capital expenditure, in the other recurrent expenditure.

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[1] See the preface by C. Lasry to *Rapport général de la Commission de l'équipement scolaire, universitaire et sportif, Ve Plan, 1966–1970*, Paris, Commissariat général du plan d'équipement et de la productivité, 1966.

(a) *The example of the French plan*[1]

The French fifth plan covers the period 1966–1970. The 'Commission de l'équipement scolaire, universitaire et sportif' is responsible, in particular, for assessing the requirements for public capital investment in school, university and sports facilities.

A number of working assumptions as to block credits were made by the commission and successively discarded as soon as it appeared from the work of other planning commissions that the credits for school facilities would not be high enough to meet all the needs which had been listed. The only assumption adopted was that corresponding to the needs 'which could be deemed to be strictly indispensable'.

Notwithstanding this radical option, the capital investments were set at 30,000 million francs, whereas the first government option assigned a bracket of 25,000 million to 28,000 million francs for capital expenditure on schools, universities and sports, and the amount finally fixed by the decision of January 1965 was 25,500 million francs.

Allowing for local authority financing, there was therefore a gap of 6,000 million francs between this amount and the amount proposed by the commission as strictly indispensable.

It therefore became necessary to list needs in order of priority and to revise the amounts assigned to each of them. It is important to emphasize that 'in the eyes of the commission, all the investments included in its low assumption already meet the definition of priority'.

On the advice of the commission and the forecasts of the government, the final breakdown shown in table 21 was reached.

What were the principal consequences of this?

1. Pre-primary education: the shortfall involved in the figures adopted is 90,000 places, or 4.2 per cent only of forecast pre-primary enrolments in 1972. In order to assess the impact of the cuts more closely,

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[1] This section is based directly on the *Rapport général de la Commission...*, op. cit., and does not take account of any variations after its publication.

Table 21. Final breakdown of capital investment on school, university and sports facilities under the French fifth plan (francs million)

Item	Commission proposal	Final amount	Percentage cut
Pre-primary	1 454	1 160	20.2
Primary	2 761	2 350	14.9
First cycle, secondary	8 239	7 500	9.0
Second cycle, short	1 898	1 710	10.0
Second cycle, long	2 192	1 250	42.75
Higher	6 305	4 820	23.1
Others	8 865	6 710	24.3

however, it is best to look solely at the urban development zones, where the shortfall is 20 per cent of needs, and the expected consequences will be stricter limitation of admission and oversize classes in some districts, in excess of the average size of 45 adopted by the commission.

2. Primary education: here again, the shortfall seems minor when assessed over-all, but in reference to urban development zones alone it reaches 15 per cent. Since primary schooling is compulsory, the amount finally adopted means raising the average size of classes from 35 to 40.
3. Long second cycle: out of 128,000 new places proposed by the commission, the credits allotted will only allow the construction of about 73,000. The size of this shortfall foreshadows tension between the social demand for entry into long second cycle and reception capacity around 1970–1972. It is true that a scheme of guidance and selection is planned to cope with this problem.
4. In higher education, it has proved necessary to drop 'a certain number of projects deemed desirable, especially in the colleges of engineering'.
5. At all levels of education the decisions mean a lessening of 'all specific effort in favour of the renovation of over-age premises and the compression of over-size classes'.

The above is a brief outline of the various options imposed by the collation between the development needs of the school system and the financial resources which can be assigned to them.[1]

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[1] The reader should not be left with the impression that the final collation phase has nothing but adverse effects. It must be remembered, for example, that the French fifth plan, among other things: (a) raises the school-leaving age to 16; (b) introduces new structures in the first cycle; (c) sets up a short second cycle (technical, commercial and administrative); (d) speeds up efforts in favour

b) *The example of the Tanzanian plan*

The Tanzanian five-year plan referred to covers the period 1964–1969.[1]

The Ministry of Education outlined a preliminary educational plan in keeping with the manpower projections supplied to it; the recurrent costs of the plan for the five-year period amounted to £58,191,000 and the capital costs £25 million. From the financial angle alone, it soon became apparent that the plan was unrealistic and that its financing was likely to come up against serious problems. Certain adjustments therefore had to be made, as shown in table 22 (p. 66).

1. In the first place, it was necessary to define with precision the contributions of the local authorities and the 'voluntary' institutions, so as to limit the analysis to the government contribution alone. This process indicated that the cost of the plan to be borne by the government would be no more than £49,423,000.
2. Secondly, the quantitative targets for primary enrolments (standards V to VII)[2] which might seem reasonable at first sight, proved to be extremely costly; selection enabled the cost to be reduced by £2,540,000. The development of the later primary classes had to be dropped and children allowed to leave school after completing standard VI. Assumptions as to a special official and private external aid effort succeeded in reducing by £504,000 the government contribution needed.

   The plan was to cost £46,379,000 of which £3.5 million was to be raised by primary school fees. At that stage the Economic Development Commission (EDC) received from the planning services proposals which were much less favourable, since they limited recurrent expenditure to about £33.5 million. It is interesting to note that the Ministry of Education considered that the minimum needed for the five-year period was £38 million.[3]
3. It then appeared that the unit cost estimates would have to be scaled down, in spite of the 'normative' character of such cuts.

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of handicapped children; (e) makes certain efforts in favour of higher education, etc. In view of the whole purpose of this section, however, we have merely dwelt on the cuts made.

[1] This section is based directly on the monograph by A. C. Mwingira and S. Pratt, 'The process of educational planning in Tanzania', *Educational Development in Africa*, Vol. I, Paris, Unesco/IIEP, 1969.

[2] In Tanzania, primary grades are referred to as 'standards'.

[3] Thus the same type of disequilibrium found in France was reproduced in other circumstances and with other consequences in an East African country.

TABLE 22. Successive modifications to estimates of recurrent expenditure on education, 1964–69

			(£ thousand)
Gross cost of first draft plan			58 191
1. *Amendment* by deduction of non-government revenues for primary education other than fees			
Local authority contribution	7 706		
Voluntary agency contribution	1 062	8 768	49 423
2. *Agreed cuts* of			
(a) Upper primary school programme	2 540		
(b) Government finance for secondary school programme	504	3 044	46 379
3. *Amendment* by deduction of anticipated collection of primary school fees		3 500	42 879
4. *Amendment* by agreed re-interpretation of unit costs			
(a) Primary education	1 975		
(b) Secondary education	400		
(c) Administration and general	121	2 496	40 383
5. *Amendment* by agreement to reduction of programme, reached by EDC sub-committee			
(a) Primary education	125		
(b) Teacher training	643		
(c) Technical education	429	1 197	39 186
6. *Amendment* by assumption of EACSO contribution to costs of higher education		852	38 334
7. *Amendment* of assumptions giving rise to anticipated savings:			
(a) Introduction of '7:4 system' (primary)[1]	400		
(b) Modified requirement for falling unit costs in higher education	80		
(c) Assumption of additional non-government finance for secondary education	98	578	37 756
8. *Amendment* of the assumed contribution to be made by local education authorities		2 250	
Net recurrent cost to the government as published in the five-year plan			33 506

SOURCE A. C. Mwingira and S. Pratt, op. cit.

NOTE

1. That is, a change from a system in which eight years of primary education are followed by four years of secondary education to one in which the length of the full primary school course is reduced to seven years

Secondly, it was no longer possible, as would have been desirable, to reduce or abolish primary school fees following the measures decided for secondary education.[1] These adjustments had the effect of reducing the cost of the plan to £40,383,000 as shown in table 22.

4. The specialists considered that no change should be made in the forecasts except by government decision. Apart from a decision affecting the cost of higher education arising out of the report of an *ad hoc* committee on the University of East Africa (£852,000), the other amendments result from decisions of a political character, namely, a cut in quantitative targets and a modification of qualitative targets, and a cut in the length of primary education.[2] Finally, an assumption as to higher local authority contributions brought the total recurrent costs to be borne by the government to £35,506,000. This is the amount shown in the published Tanzania five-year plan, 1964–1969.

All these adjustments were not achieved without difficulty. Indeed, £4,241,000 out of £22,685,000, or 19 per cent, has resulted in the severe pruning of what was described as 'the minimum development' of the education system. Furthermore, the particularly strained calculation of unit costs, while reducing the shortfall by £2,576,000, means renouncing in the immediate future any qualitative improvement' in the functioning of the education system. Finally, the readjustment of assumptions as to sources of finance involves, among other things: (a) a substantial effort on the part of foreign aid agencies; (b) the continuance of a policy of charging fees for primary education; and (c) changes in the procedure for central government grants to local authorities, which are called upon to make greater financial efforts in favour of education.

The foregoing examples are a perfect illustration of the various choices which have to be made in the planning process, choices which may have the effect of varying both the targets and the technical coefficients, and, as we have seen, even the estimates of unit costs.

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1. According to a Tanzanian representative, school fees have recently had to be increased.
2. Cut from eight years to seven.

Cost by level of education attained

A half-way formula must be found between assigning total costs to graduates only, and treating each generation of leavers at a given level as 'autonomous production'. I suggest the following for six-year primary education.

1. Up to grade 4, pupils are deemed likely to relapse rapidly into illiteracy.
2. The costs of wastage in the first three grades are assigned to enrolments (completing grades 4, 5 and 6) proportionally, for example to the number of pupil-years. More precisely, if the number of pupils completing grades 4, 5 and 6 are A, B and C, respectively, costs will be assigned in the proportions 4A, 5B and 6C. The same procedure will be followed for subsequent years, wastage for grade 6 being obviously assigned to grade–6 enrolments.
3. For each level of education, the average actual length should be calculated, allowing for repeaters. If these lengths were 4.4, 5.5 and 6.8 years for grades 4, 5 and 6 respectively, and the cost of wastage were X, Y and Z after grades 3, 4 and 5, the average annual cost being 'a', costs would be expressed as follows:
   (a) for a pupil completing grade 4:

$$\left[\frac{4AX}{4A+5B+6C}+4.4Aa\right]\times\frac{1}{A}=\frac{4X}{4A+5B+6C}+4.4a$$

   (b) for a pupil completing grade 5:

$$\left[\frac{5BX}{4A+5B+6C}+\frac{5BY}{5B+6C}+5.5Ba\right]\frac{1}{B}=\frac{5X}{4A+5B+6C}+\frac{5Y}{5B+6C}+5.5a$$

(c) for a pupil completing grade 6:

$$\left[\frac{6CX}{4A+5B+6C}+\frac{6CY}{5B+6C}+Z+6.8Ca\right]\frac{1}{C}=$$

$$\frac{6X}{4A+5B+6C}+\frac{6Y}{5B+6C}+\frac{Z}{C}+6.8a$$

The complexity of these expressions shows that evaluations of this kind are conceivable in the present state of statistical information only in the context of specific case studies.

Suggestions for further reading

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Edding, F. *Methods of analysing educational outlay*. Paris, Unesco, c.1966. (Statistical reports and studies.)

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Poignant, R. *The relation of educational plans to economic and social planning*. Paris, Unesco/IIEP, 1967. (Fundamentals of educational planning, 2.)

Vaizey, J., and Chesswas, J. D. *The costing of educational plans*. Paris, Unesco/IIEP, 1967. (Fundamentals of educational planning, 6.)

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Fundamentals of educational planning (series of booklets: full current list available on request)

Manpower aspects of educational planning (1968)

Methodologies of educational planning for developing countries by J. D. Chesswas (1969)

Monographies africaines (five titles, in French only: list available on request)

New educational media in action: case studies for planners (1967. Three volumes)

The new media: memo to educational planners by W. Schramm, P. H. Coombs, F. Kahnert, J. Lyle (1967. A report including analytical conclusions based on the above three volumes of case studies)

Problems and strategies of educational planning: lessons from Latin America (1965)

Qualitative aspects of educational planning (1969)

The following books, produced in but not published by the Institute, are obtainable through normal bookselling channels:

Quantitative methods of educational planning by Héctor Correa
Published by International Textbook Co., Scranton, Pa., 1969

The world educational crisis: a systems analysis by Philip H. Coombs
Published by Oxford University Press, New York, London and Toronto, 1968

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